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Hydro-Geology.*

By Prof. PERSIFOR FRAZER, JR., of Philadelphia.

Continued from page 161.

THE property upon which it was desired to ascertain the prospect of obtaining a sufficient supply of water for manufacturing purposes, is situated on the northern slope of the Lehigh or South Mountain, about one and one half miles from the bridge over the Lehigh river at South Bethlehem, and comprises about 37.14 acres enclosing a ravine leading up from the 150-foot contour line on the Salsburg road to a low notch in the mountain. A small stream, fed by numerous springs, forms the axis of this ravine.

[Prof. FRAZER exhibited, in connection with his paper, a sketch-map of the property and the neighboring country, on which the buildings, roads, springs and water-courses were laid down, and the topography was indicated in 10-foot grade curves, determined by means of the barometer.]

The question proposed was, whether the known topographical and geological features of the country justified the anticipation of such a supply of water as would produce ten horse power for driving machinery *on the property*.

The answer to this question involved the investigation of four important points, viz.:

1st. The average rainfall per month (or, better, per year) for several years.

2d. The topographical features of adjoining lands as affecting the surface drainage to this property.

3d. The geological structure, as affecting the subterranean flow from adjacent lands.

4th. The topographical features of the property itself, as influencing the rate of inclination of the flow and, consequently, determining the power attainable by the discharge.

1. As to the first point, it is evident that all regions above the levels of the prominent streams of a country must depend for their water upon a fall of rain.

An apparent exception to this statement is in the case of Artesian wells, by means of which water, which has been absorbed at great distances by the ground, is obtained by wells sunk to great depths, and sometimes from the summits of hills.

The accompanying sketch illustrates this. Here the stratum between A B C D is some material by which the rain which falls on the plateau, A C, is absorbed, and through which it percolates to its natural points of exit between B D. A B must be a clay, or other bed, through which the water, thus collected, cannot escape downwards; and C D a similarly impermeable roof over the water-bearing basin. This stratum will then resemble a huge pipe; and if a bore hole be made from any summit lower than A C, the pressure of the water between A and V will cause a certain portion to rise and overflow at M, and the amount that will thus overflow for a given amount of absorption along A C will be greater in proportion as the flow from V to B is obstructed and the walls of the well are watertight.

But, after all, the question of supply through an Artesian well is the same as that of supply by local springs, though the area of country and the consequent difficulty of foreseeing impediments are greater in the former case than in the latter. In both, the supply depends upon the amount of water which falls from the clouds as rain. The average daily rainfall can only be computed for a given district with any degree of accuracy after observations have been carefully taken in the neighborhood for many years. Localities near to each other often differ very much in their average fall of water per year, so that the conclusions formed from one set of observations are entirely inapplicable to another.

From the rain gauge of Frof. HEER, of the Lehigh University, kept since January 1, 1872, (the year in which this survey was made,) I was enabled to place the mean monthly fall at less than 4.6 inches. In order to ascertain whether this was an understatement of the amount, owing to any abnormal peculiarity of the past Spring, I consulted the meteorological record for the past nine years at the Pennsylvania Hospital, and found that the average monthly rain for these five months was greater than the average for the past nine years in the proportion of 5.8 inches to 4.52 inches. It was fair to conclude, therefore, that the amount of rain which had fallen in South Bethlehem for the past five months was not less than the general average for those months. Another thing must be considered before using these data of Prof. HEER, and that is, whether the average monthly rainfall during these months was as great as the monthly fall computed for the entire year. Here again the meteorological statistics of the Pennsylvania Hospital were invaluable. From these it appeared that the average monthly rainfall for April, May, June, July and August, for the past nine years, bears the proportion to the monthly average for the entire year during the same time, of 4.62 to 4.16.

Thus, then, I had strong presumptive evidence that the number of inches per month computed from Prof. HEER's observations was above rather than below the amount which could be relied on as permanent.

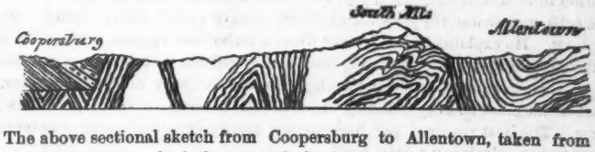
2. By considering the topography of the hills above and around the property, it will be seen that about twenty acres were so situated that the rain which fell upon them would be carried off over the surface, more or less above the fish-pond, which seemed the most eligible place for the construction of a reservoir for supplying the machinery below. Supposing all of this water to be directed into such a reservoir, and to suffer no loss from evaporation or waste, a rainfall equivalent to 4.6 inches per month (or 0.10 inches per day), would discharge itself by a continuous flow of 7.2 cubic feet in one minute, or about 53 gallons.

This amount, which is the maximum to be expected from surface drainage, is less than one-eleventh of what would be needed to produce the power required, as will be seen further on.

It must not be forgotten, moreover, that this amount represents the flow through a single channel of all the water which falls upon the twenty acres, with no loss from evaporation or leakage. In point of fact, these would reduce the amount at least 50 per cent.; so that 5 to 5.5 cubic feet are all that can be expected at that point from surface drainage.

3. As to the influence of the geological structure of the mountain on the subterranean supply:

The conditions under which it may be expected that an Artesian well will furnish a supply of water have been already explained. They are: An absorbent stratum permitting a percolation or flow through it; an impervious sub-stratum which will retain the water or prevent its escape downward; a similar stratum above, and a uniform sweep of those strata from higher ground beneath the surface at which the boring is undertaken. None of these conditions except, perhaps, the first, is fulfilled, and that only owing to the great numbers of fractures and joints in the rock of the South Mountain.



The above sectional sketch from Coopersburg to Allentown, taken from the final report of the geological survey of the State of Pennsylvania, shows the irregular internal structure of the South Mountain, and the absence of any connecting stratum between it and the surrounding formations.

The rocks which form this mountain are older than those of any of the other chains of the great belt, and therefore there can be no such connecting stratum. The dips, taken at points indicated on the map, show a general S. E. direction, and are all very steep, (72°, more or less,) which, taken in connection with the absence of a medium of transit from higher ground, precludes the hope of finding water by sinknig on the mountain.

If the bedding of this South Mountain rock were unbroken by rifts and cracks, it would prevent all drainage of water through the beds; and, in this case, but thirteen acres would have to be added to those controlling the surface supply.

The many clefts and joints will increase the amount somewhat, but even allowing as much as the total theoretical surface drainage of forty acres at 55.2 inches

* A paper read before the American Institute of Mining Engineers, at St. Louis, May, 1874.

annual rainfall, we shall attain only the equivalent of a perennial flow of 14.4 cubic feet per minute.

This seemed to me to be fully as much as could be expected from percolation and subterranean flow; and added to the 5 cubic feet of constant surface drainage, it would make a total maximum flow of 20 cubic feet per minute.

It only remained to ascertain how many cubic feet flow per minute was necessary to give the required power at some point near the lower (northern) end of the property.

Selecting, then, the vicinity of the Fish Pond as the place for the reservoir, and that of the new barn as the place for the machinery, I found the distance between these two places to be 1311 feet. The fall in this distance was 90 feet. Taking the turbine in preference to the overshot, undershot, or breast-wheels, on account of its higher co-efficient of work for the power applied, (75 to 80 per cent. against 60 to 65 per cent. for the others,) there would have to be a discharge of 80 cubic feet per minute in order to supply ten horse power, or four times as much as the surface and subterranean discharge at their maximum were able to provide.

In view of these facts I gave the opinion that it was not possible to obtain the desired power by means of the flow of water from that part of the South Mountain on which this property was situated.

I may add that even if the discharge of water equalled or slightly exceeded the amount demanded, it would be necessary to consider that this discharge could be expressed only as an average flow, while, owing to the fluctuations of springs, there would probably be several months each year when the supply would be deficient, balanced by as many more when the streams were in flood.

A motor of this capricious character is always more expensive in the long run than one which can be controlled.

An experiment with a weir made to determine the amount of water actually flowing in the small stream fed by the numerous springs in the head of this ravine, gave a little less than 2 cubic feet per minute.

DISCUSSION.

Prof. E. T. COX inquired of Prof. FRAZER if the flow of the stream was not along the anticlinal axis of the rocks? He had observed that, as a general rule, western rivers run either along the strike or anticlinal of the strata. The Ohio River, in seeking an outlet by the shortest route to the Mississippi River, would have to cross the bassetting edges of the strata. But it cannot overcome such an obstacle to its direct course except in such places as afford a soft material that it may readily cut away. The stream, therefore, as a rule, runs for the most part in a southerly or northerly direction along the strike of the strata until it finds either an anticlinal break that will permit it to take a westerly course, or until, by the accumulated force of water, it is able to make a passage in the latter direction by abrading the rocks. Attention was called to this hydrographical feature of Indiana in the Geological Report of 1872.

New Motive Power—The Carboleum Engine.

MUCH interest has recently been created in Holland by the publication, in Prof. HUISINGA's Journal, of an article descriptive of Dr. BEINS' Carboleum Motor, which promises to be "the successor of steam." It appears that for many years Dr. H. BEINS, of Groningen, assisted by his brother, Mr. J. F. BEINS, manager of the Netherlands Soda Factory at Amsterdam, has been engaged in experiments with a view of transforming heat into mechanical power more advantageously than is done in the steam and other engines at present in use. In one of these experiments they sought to find what degree of tension the carbonic acid given off by bicarbonate of soda would have, and were surprised and pleased to find that this sodium salt (or the corresponding potassium salt) in a dry pulverized state, or in an aqueous solution, when heated in a closed place, gives off a portion of the carbonic acid, which is condensed at the cold end of the space, so that at a temperature of 300 to 400° C., liquid carbonic acid can be distilled out with a tension of 50 or 60 atmospheres. Dr. BEINS has shown the experiment to several scientific men in Holland, who have taken the greatest interest in the matter. The compressed state of the gas is a condition of great importance for its application in technical chemistry, and Dr. BEINS has found that the liquid acid which he calls carboleum supplies an excellent motive power under certain circumstances. He explains that it is only when a carboleum engine works with great intermission that the heat of evaporation required can be taken from the sides of the reservoir without artificial heating. In the majority of cases, however, the carboleum must be evaporated by the artificial heating of small quantities at a time. The heat required per horse-power hourly (270,000 kgrmtr.) amounts at least to 640 calories (0.1 kilo. coal).

For marine purposes, Dr. BEINS considers the new motor especially valuable; he remarks that, as regards the use of carboleum engines for ships, the weight of such an engine—for instance, of 100-horse power—and combustible stores for 240 hours may be calculated to be one-fifth less than the weight of a steam-engine of the same power. And as many parts of the carboleum engine must be more massive, it will require less space. Since the working of a carboleum engine without regeneration depends on a neighboring carboleum manufactory, generally the engines with regeneration are to be preferred for small factories as well as for great ones. Cheap carbonic acid is, therefore, no essential condition for the applicability of this method for the production of motive power. Carboleum is without danger, since it does not contain any cause of explosion and, moreover, it is for various reasons preferable to use reservoirs consisting of smaller compartments. A too abundant accumulation of the gas in the engine-rooms, so that it renders the air irrespirable, can easily be prevented. When water is not present the metallic parts of the engine remain unaltered by the carbonic acid. Dr. BEINS experimentally found that a carboleum engine is easily constructed. Taps and joints can be made to answer perfectly. A year ago he filled a tube of hammered copper with carbonic acid of 50 atmospheres, and not the least loss is as yet observed. Wrought metals are, therefore, not permeable for gases of that tension. Perhaps the phenomena of porosity belonging to the common air-pump experiments are partly caused by the surface condensation. When, according to the law of Dulong and Petit, 0·25 is taken as the specific heat of bicarbonate of soda, and common physical laws are considered in connection with it, the plausibility of the claims made for the carboleum engine will be readily admitted.

The carboleum motor is considered equally applicable whether the quantity of power required be large or small, and it is pointed out that, especially for engines working with intermissions and during brief spaces of time, the property of carboleum of being always ready for work is of much importance—for instance, for printing presses, fire-engines, street locomotives, etc. By this same property, and since the mechanical equivalent of electricity is very small, a carboleum engine is a very fit and cheap source of electric light. Such a light would, Dr. BEINS considers, be obtainable at a much less cost than the ordinary gas-light. And, considering this great advantage, the objection that we do not yet possess good electric lamps for common use loses much of its force. He contends, moreover, that his method of compression furnishes easily the required tension for the conveyance of letters in tubes, and the modern brake apparatus for railways. Perhaps the property of carboleum of possessing a power of projection a hundred times cheaper than gunpowder can be made use of. The fact that a carboleum engine, with a sufficient store of carboleum, is independent of our atmosphere makes it, he continues, possible to construct a vessel, provided with means to sink to any depth of the sea, to rise and sink at will, to cruise about under water, and to maintain the life of the crew during that operation, to develop light, etc. The importance of this for scientific discoveries and industrial purposes is evident. For the purposes of war, also, must such a small and comparatively cheap submarine vessel place a peculiar—nay, a decisive—weight in the scale in the question of our modern iron clads.

The invention has been thoroughly examined by an official commission in Holland, and Dr. BEINS states that the late Dutch Minister of the Navy has taken great interest in the project for applying the invention for submarine vessels. The commission, it seems, agreed with the inventor regarding the main points; but, for reasons independent of the project itself, the Government has not yet resolved upon its immediate adoption. He asserts that freezing machines working by evaporation of carboleum produce ice at less cost than any existing freezing apparatus, and that as regards this general usefulness of carbonic acid it is important to call attention to the fact that an inexhaustible store of carboleum is obtainable from common chalk, which contains carbonic acid equal to half its weight, and can, therefore, produce twice its volumne of carboleum.—*London Mining Journal.*

The Coalfields of Russia.

MR. J. B. SIMPSON, of Blaydon-on-Tyne, in a paper on "The Coalfields of Russia," states that the Russian coalfields are of great extent. The principal field began in the district of Tula, south of Moscow, and proceeded in a north-easterly direction to the shores of the White Sea, where it became very narrow—a mere thin wedge, comparatively. The Tula Field covered an area of 13,000 square miles, and it included two seams of coal, respectively 3 ft. and 7 ft. in thickness. The next field in point of extent was that known as the Demity, situated in the country of the Don Cossacks, on the shores of the Sea of Azoff. That field was 11,000 square miles in extent, and embraced a vast thickness of coal, many of the seams being brought within easy reach from the surface through the dislocation of the rocks of the country. It was both bituminous and anthracite in quality; and the same seams were found bituminous in one place, while they were anthracite in another—in that respect, as Sir R. MURCHISON had pointed out, resembling, in a remarkable manner, the analogous feature of the South Wales coalfield. In this district, 60 seams have been discovered, of which it was believed 44, having an aggregate thickness of 114 ft., were workable. The chief seams were 3 ft., 3 ft. 7 in., and 5 ft. 7 in. in thickness, and the average depth of the pits was from 50 to 80 yards. The percentage of carbon was 89. Coal, 30 in. in thickness, had been found at 36 fathoms from the surface, and 36 in. at 48 fathoms. In the Ural district, there was a long, narrow coalfield at the base of that range of mountains, in which seams of coal 30 and 40 feet thick were found and worked. It was of a soft and friable nature, but threw out a great heat. The peculiarity of all these coalfields was, that they belonged to a distinct formation altogether from the true Carboniferous series; and the only coalfield of Russia which belonged to the true coal formation was a small tract of some 80 square miles in Poland, which contained seams varying in thickness from 3 ft. 8 in. to 21 ft.—this last being a magnificent vein of coal, without the slightest clod between it. There was 60 ft. of workable coal in the center of this district, but there was a marked absence of some of the rocks invariably present in the English coalfields, and the coal there rested upon the Devonian. Of the total quantity of 817,000 tons of coal worked in Russia in 1872, one-third was wrought in this small Polish basin. Some interesting statistics were given, showing the amount of wages paid, from which it appeared that the Russian miner's average wages were 10s. per week of 6 days of 12 hours each, with one hour out

for dinner; and as one of the evidences of his "native simplicity," it was observed that he had the strongest possible claims to membership amongst the "great unwashed;" for he washed only once a year, and then at the orders of the priest. Various other items of great interest to Englishmen were supplied with reference to the trade of Russia in other minerals—such as iron, lead, zinc, cobalt, and gold—from which it was inferred that the country was eminently rich in mineral wealth, and it could only be a question of time, and the educational development of her inhabitants, before she would be rendered quite independent of foreign support. There were now 8,500 miles of railway open—1,000 miles sanctioned by the Government, and many more projected—and the necessities of locomotion alone would lead to a more rapid and extensive development of their coalfields than the Russians had hitherto shown.—*Colliery Guardian.*

London Correspondence.

IRON AND STEEL INSTITUTE.

LONDON, August 31st, 1874.

TO THE EDITOR: SIR—This has been a month of scientific meetings in the country and provincial towns. These summer meetings are not altogether as dignified as the annual meetings held in London. In fact, they rather partake of the character of scientific sprees. If the senior editor regards that as too strong a term for a meeting of the character of the one held at Liege last year, he will kindly suggest a more appropriate one. If he can draw much science out of that dinner given us by "our friend" at Brussels, I should like to know where it will come in, though now I remember he did say something about a "crockery mine."

The scientific sprees this year commenced with the triangular meeting at Cardiff of the Institute of Mechanical Engineers, and the North of England Institute of Mining Engineers, on the invitation of the South Wales Institute. The expeditions to Dowlais, the Bute Docks and Landore, and accompanying "spreads," are not likely to be soon forgotten by those who were there. If there should exist any doubt in the minds of anxious, inquiring Americans as to whether we had a good time, I will refer them to A. L. H., who is considered a pretty good authority, and who was *there*.

The very full accounts which have appeared in the papers of the British Association Meeting at Belfast, indicate that the "savants" have a due sense of the importance of enjoying themselves.

On September 1st, the grave and reverend iron masters, and iron and steel metallurgists, will test their powers of endurance at the meeting of the "Iron and Steel Institute," to be held on the invitation of the iron masters in the Barrow district at Barrow-in-Furness.

The indications are, that this will be one of the most important meetings yet held. I am informed that fully one thousand are expected to be in attendance, and of this number there will be a large delegation from Belgium.

All the mines and works in the Furness and Cumberland districts will be opened for inspection, and a most cordial reception, on every hand, is promised. The iron and steel interests at home will be worthily represented by HOLLEY and COGSWELL, two V. P.'s of the American Institute of Mining Engineers, Gen. JOHN T. WILDER, of the Roane Iron Company, P. H. MILLER, of New York, and I have lately learned that ABRAM S. HEWITT is also expected.

Mr. HOLLEY is to read two papers, one "On Rolling Mill Machinery Arrangements in America," and the other "On Improvements in setting Bessemer Converter Bottoms." As will be seen from the accompanying programme and maps the arrangements are to be carried out on a liberal and most systematic scale.

G. W. M.

Notes.

The Separation of Ores by Magnetic Power.—In most of our metalliferous mines, ores of several kinds are produced from the same lode, which it is the business of the dresser to separate. Where the specific gravities vary considerably, this is not attended with much difficulty; but where such ores as blende are associated with spathose iron, iron pyrites, or copper pyrites—all ores of similar specific gravity—a perfect separation is impossible by hydraulic means, and such ores are frequently unsalable from the low percentage of metal, or from the injury caused by one metal in smelting the other. The latter is especially the case where iron and copper pyrites occur with blende, the smelter obtaining only hard spelter. The author had his attention directed to this subject by being interested in a mine where the ores from the vein-stuff consisted of lead, blende and spathose iron. The lead was dressed without much difficulty; but owing to the similar specific gravity of the blende and iron, these could not be separated, although the best-known methods of sizing and mechanical dressing were resorted to. This is not surprising, when it is known that the specific gravity of blende is about 4·0, and that of spathic iron 3·85. The blende received from this mine being about three times as much as the lead, it became essential that the blende should be marketable. In carrying out various experiments upon these ores, it was found by the author that the iron, being composed of protoxide of iron and carbonic acid (Fe O, CO^2), would, at a dull-red heat, part with its carbonic acid, and become then a magnetic oxide of iron. It is necessary, however, that this heating should be done without access of air, or a higher oxide, which is more magnetic, will be produced. The process is now in operation at the Ballycorkish Mines, Isle of Man, and the agent reports that it is rendering vein-stuff that has hitherto been unmarketable, and commonly discharged with the halvans, of high commercial value. The treatment adopted is as follows: The blende and iron ores are fed through a hopper into revolving iron retorts heated by a fire beneath, and are delivered when heated to redness in a close chamber. The ores thus prepared are carried by an elevator to the magnetic machine, which consists of four magnetic wheels, the magnets being so arranged that the whole surface of the wheel is magnetic. The ore falls upon a band which passes round the wheel. This band is made of any thin material that allows the magnetic force to pass through, and the blende not being held to the wheel, falls into a shute, and is received into barrows, while the iron adheres to the wheel, and drops into another shute at a point where the band is removed from contact with the wheel by means of a roller. In the separation of copper pyrites or iron pyrites from blende, the treatment is somewhat similar; but the heating process is more simple, as access of air during the heating is an advantage. The result of the application of heat on pyrites is to remove a portion of the sulphur, bringing it to the condition of magnetic pyrites, which occurs as a distinct ore in some mines, and its composition is represented by Fe S^2+6 Fe S, while that of iron pyrites, before heating, is Fe S^2. From the data already obtained, it is found that, although the arrangements for heating ore are not yet perfect, these ores can be heated at a cost of about 3s. to 4s. per ton, including fuel, attendance, etc.; and that blende ores, hitherto unsalable, can be brought to a value of £3 to £4 per ton. The author trusts that this result is of sufficient importance to justify his bringing the subject to the notice of the Miners' Association of Cornwall and Devon.—*F. C. King, in London Mining Journal.*

The Welding of Iron.—When two pieces of ice are rubbed against each other, fusion takes place between the surfaces of contact, at a temperature below zero. As soon as the pressure ceases, solidification is again produced and the pieces are welded together. It seems to me that the welding of iron is a phenomenon exactly similar. The two pieces of iron are brought to a white heat, that is to say, more or less near to the fusing point. The repeated blows of the hammer, or the pressure of the rolls, lowers the point of fusion and causes a superficial liquefaction of the parts in contact, and thus welds the masses together; and this, because, like water, iron dilates in passing from the liquid to the solid state. Many other metals are similarly endowed; they all, therefore, may be welded like iron, if other conditions do not come to oppose the manifestation of this property. Platinum welds easily at a white heat, because its non-oxidizable surface, like ice, takes on a superficial fusion. To weld iron successfully, it is necessary that its surface should be clean, that is, free from oxide. Iron containing phosphorus welds more easily than pure iron, because its point of fusion is lower. Steel, which is more fusible still, welds at lower temperature than iron, but the process is a more delicate one. Silver, too, like iron and platinum, has the property of expanding when it solidifies; but as it melts at a cherry-red heat, it is easier to form by casting than by welding. Bismuth and zinc are always included in the same class; but they are so very brittle near their fusing points that no one would think of attempting to weld them by hammering or pressure. Iron, in welding, therefore, only follows the example of water. The fibrous state of iron is not a normal and regular one. All crystalline iron, if the crystals are not too hard, breaks with a fibrous structure if time be given in the breaking for these crystals to be drawn out into fibres. Iron which is fibrous is only iron in which the primitive crystals, surrounded by very thin films of slag—and thus separated from each other—have not been welded together during the rolling, but have been elongated into wires. A bar of such iron resembles a bundle of wire in its resistance to fracture, but it breaks with a granular fracture when exposed to a transverse blow suddenly applied.—*Professor Jordan.*

The Buffalo Coal Company.—A new coal company with a capital of $1,000,000, all of which was subscribed in a single day, has been organized at Buffalo, under the direction of GEN. GEORGE J. MAGEE, of Watkins. The mining lands, which have been thoroughly inspected, are located in McKean and Elk Counties, Pennsylvania. They lie in a territory some seven miles in length by four or five miles in width. Under a large portion of this territory are said to be five or six workable veins of coal, though for some time not more than three of them will be made available. The upper vein is from eighteen inches to two feet in thickness, the second one from three to four feet, and the third from four to five feet. There are now eleven openings to these strata of coal, at points covering the circumference of the whole 16,000 acres of land which have been secured. Several of them have been worked and the product tested. From Buffalo to the center of this coal area the distance is about 105 miles, which is 100 miles less than the route over which the coal now sold to the Central Road, in Buffalo, is brought. The Board of Directors agreed upon for the first year is as follows: GEORGE J. MAGEE, Watkins; DANIEL BEACH, Watkins; JOHN LANG, Watkins; DANIEL C. HOWELL, Bath; J. CONDIT SMITH, Buffalo; FRANCIS H. ROOT, Buffalo; PASCAL P. PRATT, Buffalo; BRONSON C. RUMSEY, Buffalo; WILLIAM H. GLENNEY, Buffalo; G. R. WILSON, Buffalo; JAMES MACFARLANE, Towanda, Pa.; BYRON D. HAMLIN, Smethport, Pa.; JOHN F. MCPHERSON, Warren, Pa.

Treatment of Puddled Balls.—Mr. C. W. SIEMENS, of Westminster, has obtained a patent which relates to shingling and compressing puddled balls, and to the construction and operation of apparatus for that purpose. The ball is placed on a turntable and subjected to the pressure of three or more hydraulic rams advanced simultaneously towards it horizontally in radial directions. The pressure being relieved and the rams withdrawn by counterweights or springs, the turntable is partly turned so as to present fresh portions of the ball to the rams, which are again advanced. When the ball has thus been squeezed all round, a ram or screw head is brought to bear on it vertically, and the rams are advanced with a higher degree of pressure, after which the consolidated metallic mass is withdrawn to be rolled, hammered, or converted into steel. To economise power, two sources of hydraulic pressure are employed, the one giving a low pressure for the first part of the operation, and the other a much higher pressure for completing it. Instead of using a number of separate hydraulic cylinders, the several pressure heads may be worked from one hydraulic cylinder, or by steam or other power.

American Mines in London.—Two charges of fraud have been recently brought before the London magistrates, in connection with American mines introduced upon the London market about two years since. The charges are, that the prospectuses misrepresented the actual facts, and the shareholders, as their shares are worthless, are seeking to punish the alleged offenders in the Criminal Court. It may be worth while to notice that the Ruby Mines, which were purchased for £40,000, were introduced into the London market as a limited company, with a share capital of £325,000 in £10 shares; while the Richmond Mine, in Nevada, was purchased for £50,000, and was resold to a syndicate for £150,000 in cash, and £50,000 in paid-up shares.

The Longest Wire Rope in the World.—We have just had an opportunity of seeing, at Shadwell, England, a grapnel rope of 10,000 fathoms weight, without a splice—that is, a little over eleven miles and a quarter—made for Siemens' Telegraph Company. The coil formed by this monstrous object is five feet high, and its diameter is twenty-four feet. The rope is three-strand, six and a half inches in circumference, or two inches thick.—*Iron.*

THE ENGINEERING AND MINING JOURNAL.

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ROSSITER W. RAYMOND, Ph. D., Editor.
RICHARD P. ROTHWELL, C. E., M. E.,
Editor of the Coal and Iron Department.

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Geology of the Black Hills.

PROF. WINCHELL, of the University of Minnesota, who accompanied, in the capacity of geologist, the late expedition to the Black Hills, does not by any means endorse the glowing reports we have had of the existence of gold in that region. He speaks of the existence, in many places, of beds of lignite in Cretaceous measures, the area of which series he finds to be much more extended than was supposed by Dr. HAYDEN. He says:

"From the Belle Fourche the formations passed over in entering the Hills came in the following order :

No.	Formations.	Feet.
1.	Purplish or black slate, Fort Piere	300—400
2.	Sandstone, Dakota, about	500
3.	Green shale, Dakota	45
4.	Fossiliferous conglomerate	2
5.	Purplish shale, towards the top arenaceous	10
6.	Snowy gypsum	46
7.	Red shale, massive or laminated	75
8.	Snowy gypsum	22
9.	The same as No. 7	18
10.	Snowy gypsum	2½
11.	The same as No. 7	30
12.	Snowy gypsum	2½
13.	The same as No. 7 and slope	35
14.	Fine-grained limestone on which the last lies unconformably. This is known as the Carboniferous limestone, about	100
15.	Hard, arenaceous limestone, about	75
16.	White massive sandstone, about	75
17.	An immense limestone formation stretching over a large area in the northern portion of the Hills, capping hundreds of buttes and bluffs. This is a light-colored, often saccharoidal, variable limestone. It is hard and usually of a compact texture	225
18.	Hard red limestone with small, rounded quartz pebbles	25
19.	Red sandstone with glauconitic particles, perhaps 25 feet, seen only.	10
20.	Conglomeratic sandstone, white	30-40
21.	Metamorphic schists and slate	—
22.	White feldspathic coarse granite	—"

Prof. WINCHELL sums up the useful minerals of the Hills as follows ; very little importance is given to the reported discoveries of gold :

"In respect to the economical products of the rocks of the Black Hills, the following minerals exist in considerable quantities, and will ultimately be found very useful : Gypsum, in unlimited quantities ; variegated marble from the carboniferous limestone ; iron ore in the south-eastern portion of the Hills ; muscovite ; talcose slate, useful for whetstones. There may be found also other products of the granite rocks ; indeed, the miners that accompanied the expedition report the finding of gold and silver in some of the gulches in the south-eastern portion of the Hills, though I saw none of the gold, nor did I see any auriferous quartz. I have taken the gold reports with a large grain of allowance.

"The granite center of the Black Hills is in the southern and south-eastern portions. * * * * A large part of the Hills, especially in the north, are composed of slightly tilted sedimentary rocks, cut by erosion into bluffs, buttes, and ridges, separated by valleys that generally are well watered, often grassed and arable. The Hills have a delightful climate, pure water, abundance of pine timber, and a sufficient quantity of arable land to sustain a thick population."

Calculation of Blast from Gas Analyses.

THE question of the best way to calculate the amount of air blown into iron furnaces is an old one, and also a still unsettled one. To multiply the capacity of the blowing cylinders by the number of strokes, involves the correct estimation of clearance, windage, leakage in the pipes, in the hot-blast oven, and around the tuyeres. All of these corrections are only approximate. To take the velocity and pressure in the pipes would be more accurate, if the velocity could be accurately determined, which, however, few furnace-men have the means of doing. The estimation, based on the tuyere area and the pressure, is less satisfactory, since the stream of air issues not into the atmosphere, but into a closed vessel, the atmosphere of which is at an elevated pressure. The last, and probably the best way, is to deduce the amount of air received by the furnace from the analysis of the gases.

This method consists, first, in analyzing the gases, and from the amount of carbonic acid and carbonic oxyd found, calculating the amount of oxygen present. The proportion of this, which is due to the ore and limestone, is then deducted, and the remainder indicates the amount of air used. This result is referred to the ton of pig by means of the carbon in the gas.

GRUNER, in his *Studies of Blast Furnaces*, gives a number of formulæ for working out this problem. They are numerous, and may appear complicated, but they have the advantage of requiring nothing but the ordinary information possessed by every furnace-man, in addition to the analysis of the gases. The whole process depends upon the carbonic acid ratio, or $\frac{CO^2}{CO}$ as found by the analysis. This he calls m, and from it the weight of the CO, or y, can be found by

$$(1)\ y = \frac{77\,p}{33+21\,m}$$

In this equation, p is the total carbon in the gases, and that is found from the furnace record, by adding a, the amount of pure carbon (in tons) per ton of pig, to b, the amount of carbon in the flux. The next equation is intended to deduce the amount of oxygen in the blast, x, for which the following equation is given.

$$(2)\ x = \left(\frac{44+56\,m}{33+21\,m}\right)p - d$$

In this equation, x is the oxygen of the blast and d is the oxygen of the ore and flux, obtained from the following equation :

$$(3)\ d = \frac{8}{3}b + \frac{3.03}{7}$$

Hitherto the formulæ have been constructed on the supposition that the product was pure iron, and the foreign materials in pig metal require some correction. GRUNER therefore assumes a theoretical pig iron having the composition :

Iron	94
Carbon	3
Silicon	2
Earthy metals	1
	100

Which, instead of x, gives the fraction $0.9767\,x$. The calculation for the amount of blast actually utilized in the furnace now becomes :

Weight of nitrogen	$3.33\times0.9767\,x$
Weight of dry air	$4.33\times0.9767\,x$
Weight of moist air	$4.33\times0.9828\,x$

The use of these formulæ will be made clearer by an illustration which will also show how correct they are. One of the applications made by GRUNER relates to the 48 ft. Clarence furnace, the data of which are found in Mr. BELL's papers. This consumes 1.45 tons of coke, or 1.318 tons pure carbon, and 0.83 tons limestone per ton of pig. We have therefore :

$$a = 1.318$$
$$b = 0.12\times0.8 = 0.096$$
$$p = 1.318+0.096-0.03 = 1.384$$

In the second of these, 0.12 is the percentage of carbon in limestone, and in the third, the 0.03 deducted is the carbon absorbed by the pig metal, which of course does not enter the gases. The analysis of the gases gave for the carbonic acid ratio

$$m = \frac{CO^2}{CO} = \frac{11.80}{30.50} = 0.387$$

The weight of carbonic oxyd is therefore

$$(1)\ y = \frac{77\times1.384}{33+21\times0.387} = 2.591 = CO$$

$$(2)\ d = \frac{8}{3} \times 0{\cdot}096 + \frac{3{\cdot}03}{7} = 0{\cdot}679$$

$$(3)\ x = \left(\frac{44 + 56 \times 0{\cdot}387}{33 + 21 \times 0{\cdot}387}\right) 1{\cdot}384 - 0{\cdot}679 = 1{\cdot}531$$

Weight of Nitrogen.....$3{\cdot}33 \times 0{\cdot}9767 \times 1{\cdot}531 = 4{\cdot}989$
Dry air.....$4{\cdot}33 \times 0{\cdot}9767 \times 1{\cdot}531 = 6{\cdot}474$:
Moist air.....$4{\cdot}33 \times 0{\cdot}9828 \times 1{\cdot}531 = 6{\cdot}515$

GRUNER does not work out this example to ascertain the amount of air blown into the furnace, but merely calculates, by means of his formulæ, the weight of N, CO and CO^2 in the gas, and finds that his results differ by only 2 per cent. from the actual analysis published by BELL. In another case, the difference was only 0·1 per cent. Both of these go to prove that the new method is much more accurate than any of the old ones, and it might frequently be worth the while of an iron master to have furnace gases analyzed for the purpose of ascertaining how his blast engine worked.

Recent Progress in Economy of Fuel.

BY CAPTAIN C. E. DUTTON, U. S. Ordnance Corps.

[Abstract of a communication to the Washington Philosophical Society.]

IN valuing the thermal effect produced by the combustion of fuel, the quantity first demanding attention is the quantity of sensible heat generated by unit quantity of fuel. We may omit all hypothesis or speculation regarding the ultimate nature of heat, and consider it as a simple prime factor; just as in treating a dynamical problem we use the term force, or pressure, without any particular assumption as to its ultimate nature. We must distinguish carefully between the total heat of combustion and the sensible heat. The total heat of combustion represents the entire sum of the energy developed by the process of oxidation. Not all of this heat or energy is manifested in the form of sensible heat in the resulting gases and other products of combustion—that is to say, a portion of this heat is not exercised in making these products hot, but becomes latent in the transformation of the solid fuel into gases. With this latent heat we need not concern ourselves; but we may confine our attention to the sensible heat, for this is the heat which is transformed from the fire to the substance which is to be heated, and the total quantity of it generated per unit weight of fuel may be used to measure the true and available calorific power of that fuel.

Temperature, on the other hand, is a complex quantity; and it will best suit our present purpose to consider it as that condition of a body by virtue of which it is capable of imparting or receiving heat. Temperature does not depend upon quantity of heat alone, but also upon two other quantities:—

1st. The mass or quantity of matter through which a given quantity of heat is distributed;

2d. The specific heat of the substance.

It is well known that the greater the mass through which a given quantity of heat is distributed, the less will be the temperature. The temperature will also be less, the greater the specific heat; and hence we may say, that the temperature will be inversely proportionate to the product of the mass into the specific heat. But it is an observed fact, that the specific heat of any gas is (approximately) inversely proportional to the density; and hence, in place of the product of mass into specific heat, we may substitute the volume of the gas, and say that temperature is proportional to the quantity of heat contained by a gas, divided by its volume. All attempts at economy of fuel, therefore, must keep in view the following requirements:—

1. To develop as much of its calorific power in the form of sensible heat as is practicable;

2. To obtain from a given quantity of heat the highest possible temperature.

The failure to realize the total calorific power is, of course, due to imperfect combustion, which will be manifest when we glance a little in detail at the ordinary practice of grate-burning. A stream of air, pouring through a bed of coals, and containing originally only one-fifth of oxygen, cannot effect that thorough contact of oxygen with carbon, molecule to molecule, which is requisite to insure complete combustion. The oxygen is rapidly depleted, (though not exhausted,) and the carbonic acid, formed at the bottom of the bed, takes up more carbon at the top, and the gases issuing from the bed are a mixture of both oxides of carbon, with some oxygen, and a great body of nitrogen. In the flames a further reaction takes place between the carbonic oxide and the remnant of oxygen, by the rapid diffusion of the gases; yet before the oxygen is fully exhausted the flames have radiated their heat and cooled down below the temperature of ignition. In the case of bituminous fuels, the hydrocarbons are volatilized by the heat, and passing into the general draught, the hydrogen, by its stronger affinity, appropriates the oxygen, while the carbon is precipitated in the form of dense black smoke. Increasing or diminishing the draught does not essentially alter the general nature of the process, although for each particular case there is a fixed rate of air supply, and a definite thickness of the bed of coals, which results in a minimum waste. But in any case the waste is always considerable, and the temperature always far below that which theory indicates as a maximum possible. In current practice it is customary to estimate the air supply at nearly double that required to effect complete oxidation of bituminous coals, and about 60 per cent. of excess for anthracite and coke. We may sum up the difficulty very rapidly. In order that complete combustion may be effected, it is necessary that the molecules of the constituents be brought into contact, each to each, in the proper proportions, under a temperature sufficient for ignition. To effect this, a perfect diffusion of the gaseous constituents must be produced. But this diffusion, or perfect intermingling, requires time and a great amount of agitation, and before it is complete the gases have cooled below the required temperature of ignition, and are discharged through the flues without combining perfectly.

There are, then, two directions at least in which economy of fuel may be sought: 1st, By obtaining a larger percentage of the total calorific power; 2nd, by obtaining from every unit of heat a higher temperature. Of the advantage of the first, nothing needs to be said. The rapidity with which thermal changes are communicated depends mainly upon differences of temperature. This rapidity of interchange increases with the difference of temperature, not in an arithmetical, but in a geometrical ratio. But even this does not represent in all cases the advantage of high temperature. There are numerous processes where even a slight increase gives an enormous advantage. For instance, a furnace for melting steel, where the utmost temperature that can be obtained requires several hours to effect the melting. Here the addition of even 100°, if it is practicable to secure it, will reduce the time of the operation to a few minutes.

During the last thirty years a great number of inventions have been proffered to the public, having for their object the complete combustion of coal upon the grate. That many of them effect a sensible saving cannot be denied. Yet it is equally certain that this method is but little in advance of the status it occupied thirty years ago. The efforts to improve it have generally failed, not through want of intelligence, or ingenuity, but through the defective nature of the process itself. It might be rash to say that it is not susceptible of improvement, so long as its present general features are retained; but at least the prospect is most discouraging. It will be noticed that all the really great inventions which mark epochs in the progress of thermo-technology, and which have created new possibilities, have either discarded the grate altogether, or have assigned it a very subordinate part in the processes.

In addition to what may be called the original economy of the Bessemer process for obtaining steel in the fluid form, the last three years have witnessed very great progress in economy of fuel through a much better adaptation and balance of the constituent parts of the process. When Bessemer works were first put in operation in this country, a monthly average of 8 or 9 heats a day was thought very well of—but at present this production is about quadrupled. It was as necessary, then, to keep up steam for a large blowing engine, and to maintain fires in the subsidiary parts of plant, as it is now, and large quantities of fuel were expended while the plant was undergoing repairs and waiting for the blow. The recent growth of this process is a fine example of what may be effected by a coördination of parts, in such a manner that each may work to its full capacity, and without interruption. This growth has been mainly in the perfection of smaller details. * * *

Several years ago, Mr. BESSEMER proposed to increase the temperature of the converter by obstructing the outflow of gas at the nose of the vessel by a stopper, thus generating a considerable back-pressure within. The theory is a sound one, though practical difficulties seem to have prevented its general adoption. When gases are compressed in the act of combustion, less heat becomes latent and more heat becomes sensible—the result of a given combustion in the present case being a higher temperature. This would render practicable the use of pig-irons containing less silicon and requiring less blast to convert them. Such irons are smelted with considerably less fuel in the blast furnace; and if this seemingly trivial device could be made to perform its office it might be found to effect a notable saving.

The use of fuel in the form of dust has recently come before the public, and promises most valuable results by the method employed by Messrs. WHELPLEY & STORER. In this process the fuel is comminuted to an extreme degree, and blown into the furnace in a dense jet by the pulverizing fan. That perfect intermixture of fuel and oxygen which is requisite to insure complete combustion, is effected before the ignition, and each particle is floated into the furnace surrounded by the oxygen which is to burn it. It is possible in this condition t burn the coal completely by a supply of air not greatly in excess of the theoretical minimum, and the result is obviously a very high temperature. The temperature attainable by it ought to be as great as that of the Siemens furnace, or even greater, under favorable conditions, and with the same amount of fuel.* This process is in use at Springfield Armory, where the expenditure of fuel for heating the skelps for gun-barrels is but a trifle more than one half of that required by the old method, where the coal is burned in the ordinary manner in a reverberatory furnace. The reduced air-supply in this process causes a slower passage of the heated gases through the furnace, and where it is employed for generating steam, the gases are longer in contact with the flues and plates of the boiler, and hence a larger percentage of the sensible heat is communicated and less is carried off at the end of the circuit.

TO BE CONTINUED.

* Some of the estimates of the temperature of the Siemens furnace are grossly exaggerated. The best estimates show that it does not, in ordinary practice, exceed 1400° C., or 2550° F., and probably never reaches above 2700° F. This estimate agrees well with the fact that the time required to effect the perfect fusion of wrought iron in this furnace is, at the best, not less than five hours—the melting point of wrought iron, according to M. ED. BECQUEREL, being about 1350° C.

CORRESPONDENCE.

Coal Quarry, Etc.

WILKES-BARRE, September 14, 1874.

TO THE EDITOR: SIR—The nine-inch hole being made by the Diamond Drill Company at Sugar Notch has reached a depth of 220 ft. They have had to pass through some very hard rock, which has worn very much on their bits, and has caused considerable delay, by their inability to get them reset promptly.

The latest novelty in this district is coal-cutting by the open quarry plan, which will be done to a considerable extent by the Lehigh and Wilkes-Barre Coal Company at their Wanamie (Newport) works. They have proved, at the present time, the existence of the Ross Seam, with a covering of but one to four feet of ordinary soil, underlying territory 500 by 2800 ft., and have every reason to suppose that it is much more extensive, and will continue their provings. This seam is about 19 ft., thick, and of very superior quality. The top bench (about 3 ft.) shows indications of the action of water, and gives some very beautiful samples of "peacock coal." With the exception of about 3 in. on the top, which has a rusty appearance, the coal is of a very superior quality. This work has only been going on for about a month, and they have but about 50 ft. of a face upon which to work, from which they are taking about 45 tons a day. As they increase the face of their workings, they will be able to do a very extensive business. In removing the surface, in the future, they will fill in where the coal seam has been worked out. This is by far the cheapest worked coal in the county, requiring no outlay for machinery, shafts, slopes, gangways, opening of breasts, props, etc., etc.; being easier blasted, with no loss from pillars, and better facilities for ridding the coal of the slate before sending it to the breaker. If the indications continue so good as at present, this discovery will prove a source of great profit to the company.

About 1200 tons of coal are being shipped from Wanamie per day. They are building new water works there, with a reservoir covering seventeen acres. Pipes are being laid to all the houses, boilers, breakers and entries to the mines. Flag pavements are being laid down, and the town is assuming an active appearance.

The active demand for coal from the North and West is reported to have fallen off very much, and it appears that those markets are becoming as much overcrowded as the Eastern markets. G.

Underground Haulage at Pittsburgh, Pa.

A VALUED correspondent, who has promised us further details, writes us in reference to this important subject as follows:

"We have three systems at work: 1st. The single rope, where the empty cars run from the pit mouth, dragging the rope after them. 2d. A friction end ess rope arrangement. 3d. The drum and tail-rope system. My preference is decidedly in favor of the tail-rope, for working the Pittsburgh vein of coal. The cost to us of each of those systems, together with the grades of our roads, and amount of tons hauled per load, will form the subject of my next communication.

"Again, while many coal men prefer a light (comparatively) load and a high rate of speed, yet our preference is to load our lines and engines to their capacity, and run our cars at no higher rate of speed than from two and one-half to three miles per hour. By so doing we think we save our ropes, our tracks cost less for repairs, our cars cost less keeping up, and when a smash comes, not much damage is done." M. G.

COAL TRADE REVIEW.

Import Duty on Coal.

Anthracite free. *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c., gold.

Not otherwise provided for, per ton, 40c. gold.

This is the only report published that gives full and accurate returns of the production of our Anthracite mines.

NEW YORK, Sept. 18, 1874.

The Production of Anthracite Coal for the week ending Sept. 12, 1874, was as follows:

Tons of 2240 lb.	WEEK. Tons.	YEAR* Tons.
Wyoming Region.		
Delaware and Hudson Canal Co	54,731	1,621,287
Delaware, Lackawanna and Western R.R	48,087	1,702,280
Pennsylvania Coal Co	29,019	913,293
Lehigh Valley R.R	15,259	674,210
Pennsylvania and New York R.R	1,595	42,386
Central Railroad of New Jersey	36,947	946,483
Sold at the mines by L. & W. C. Co	397	13,901
	186,035	5,913,846
Lehigh Region.		
Lehigh Valley R.R	73,136	2,202,868
Central Railroad of New Jersey	31,253	754,300
Danville, Hazleton & W. B. R.R.,	1,028	26,186
	105,417	2,983,354
Schuylkill Region.		
Philadelphia and Reading R.R	147,348	3,302,229
Shamokin and Lykens Valley	28,179	616,255
	175,527	3,918,484
Sullivan Region.		
Sullivan and Erie R.R	582	26,552
Total of all the regions	467,561	12,842,236

* Year beginning Jan. 1.

The following table does not give the entire production of our bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending Sept. 12, was as follows:

Tons of 2000 lb.	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Cumberland and Pennsylvania R.R	48,774	1,591,873
Cumberland Branch R.R	6,877	235,129
Barclay Region, Pa.		
Barclay R.R	7,268	238,825
Broad Top Region, Pa., 2 weeks.		
Huntingdon & Broad Top R.R	4,702	163,373
Clearfield, Region, Pa.		
Snow Shoe	894	42,369
Tyrone and Clearfield	11,855	420,863
Allegheny Region, Pa., " " " "		
Pennsylvania R.R	3,717	147,737
Pittsburgh Region, Pa., " " " "		
West Penn. R.R	3,472	133,651
Southwest Penn. R.R	105	4,984
Penn. and Westmoreland gas coal, Pa. R.R.	16,628	633,133
Pennsylvania R.R	12,037	309,192
Kanawha Region, W. Va.		
Ches apeake and Ohio R.R	....	....
Shipments from *Block House Region, Nova Scotia*, to Sept. 5.		
Consigned to the Provinces, tons 2240 lb	537	9,907
" " " United States " " "	1,036	12,796
Shipments from *Pictou Region, Nova Scotia*, to Sept. 5.		
Consigned to the United states tons 2240 lb.	3,806	39,197
" " " West Indies " " "	1,195	5,012
" " Canada " " "	4,570	72,950
" " Other provinces " " "	4,797	43,282

The Production of Coke for the week ending Sept. 5:

Tons of 2000 lb.	Tons.	Year. Tons.
Tyrone and Clearfield	14	480
West Penn. R.R., " " " "	288	617
Southwest Penn. R.R " " " "	8,458	274,319
Gas Coal, Penn. R.R. " " " "	810	25,700
Pittsburgh Coal, Penn. R.R. " " "	117	45,365

The production of Anthracite for the week ending Sept. 12th was as follows: Wyoming Region 186,035 tons, being 16,815 tons more than the preceding week. In the Lehigh region, 105,417 tons, or 6,151 tons less than the week before, and in the Schuylkill region, 175,527 tons, being 15,556 tons more than the preceding week.

The total production of Anthracite from all the regions was for the week 467,561 tons, as against 442,098 tons the preceding week, and 506,313 tons for the corresponding week last year. From January 1st to Sept. 12th, there were produced 12,842,236 tons, as against 13,858,657 tons for the same period last year. The figures of last year's production are taken from the Pottsville *Miners' Journal*.

The Delaware and Hudson Canal Company has at Honesdale 130,000 tons, at Rondout 45,000, at Weehawken 13,000 tons.

The receipts at Port Richmond were 66,000 tons; shipments, 57,000 tons; and balance on hand 72,000.

The receipts at Greenwich, Philadelphia, were: bituminous 2645 tons, and gas coals 3410 tons; shipments: bituminous 3039 tons, and gas coals 1603 tons; balance on hand: bituminous 2621 tons, and gas coals 5404 tons.

The production of Cumberland coal from January 1st to Sept. 12th, inclusive, was 1,827,002 net tons of 2000 lb. The production for the week was 55,650 tons.

The receipts of coal at Buffalo for the week were 8525 tons. The shipments by Lake for the same period were 4490 tons.

The receipts of Cumberland coal at Locust Point, Baltimore, for the week were 26,310 gross tons. West Va. gas 2410 tons.

The exports of coal from Baltimore from the 1st of January to the 10th of September were 61,658 tons, as against 48,833 tons, during the same period in 1873.

We have no objection to *Saward's Coal Trade Journal* copying week, after week, our figures giving the production of coal, but honesty and courtesy demand that credit should be given for information which we have acquired by the expenditure of much labor and expense, and which it cannot obtain except in our columns.

Our neighbor not only publishes extracts from our reports as his own, but claims for these extracts that "the tables of coal production given by us [it] are the most complete and simple of any published." This is surpassing the limits of discourtesy.

The combined companies have agreed to reduce the amount of anthracite coming to competitive points 25 per cent. off of the ten million basis for the month of September.

The demand for coal has somewhat increased, and with some of the companies the curtailment of 25 per cent. is preventing the filling of orders. It is difficult to obtain supplies of Wilkes-Barre coal of several sizes, and particularly stove, broken and steamer. On the other hand, some of the large companies find their stocks accumulating. The great improvement in trade, anticipated by dealers some time ago, has not come as expected; there is, however, more business being done and a better tone in the market. Our special reports from all parts of the country give the old story of full supplies and low prices.

In bituminous coal there has been no change; prices remain as quoted. Cumberland is still sold at Georgetown at $4.30, notwithstanding the increased towage the companies now pay. The condition of affairs on the Chesapeake and Ohio Canal is still exciting some attention, the Boatmen's Union having passed arbitrary resolutions to the effect that no coal shall be permitted to pass through the Canal except it pay the rates ordered by the Union, and that no rebate or drawback shall be allowed. They have prevented going to work, by force and intimidation, those who are disposed to work on at the old rates, and the Canal direction has ordered a posse to accompany the boats and prevent disturbance.

The absolute control of the Canal, by a Boatmen's Union, who dictate rates and what may and what may not be done, almost as fully as though it were private property and belonged to them, cannot of course be tolerated, and it is very evident the Canal authorities must find some way of stopping it.

It is very openly affirmed that the strike and subsequent action of the boatmen has been encouraged, if it has not been originated, by the Cumberland agents of some of the companies. These agents, it is stated, are directly interested in the earnings of the boats, and are consequently disposed to pay higher rates, which it is more than intimated they themselves suggested. The practice of agents receiving a commission, in some form or other, on the expenditures of the companies whose business they manage may not be as well known to stockholders as its importance and frequency deserves; but the efficient discharge of their duties by the directors should at least make them aware of a fact so common at present, and, by a little investigation, they could easily ascertain the *modus operandi* by which managers or agents in receipt of very moderate salaries may suddenly grow rich, and stockholders grow sick of mining investments with "hope long deferred" in the matter of dividends.

Wholesale Prices for Sept. of Anthracite f.o.b., at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
†Lackawanna and Scranton at Elizabethport & Hoboken	5 25	5 35	5 45	5 60	6 10	5 05
‡Pittston at Newburgh	5 10	5 10	5 20	5 35	5 85	4 85
Wilkesbarre at Port Johnston	5 25	5 35	5 45	5 60	6 10	5 05
Plymouth, R. A	....	....	5 45	5 60	6 20	5 05
Susque. Coal Co. at Amboy W.A.	5 25	5 35	5 45	5 60	6 20	5 05
Kingston at Hoboken	5 25	5 35	5 45	5 60	6 10	5 05
Lehigh Coals.						
Old Company at Port Johnston	6 20	....	6 15	6 15	6 30	5 35
Old Company's Room Run "	5 70	....	5 70	5 70	6 05	5 05
Sugar Loaf at "	6 20	....	6 15	6 15	6 15	5 20
Lehigh Coal Exchange "	6 05	....	6 00	6 00	6 15	5 20
Honey Brook at Elizabethport	6 05	....	6 00	6 00	6 15	5 20
Spring Mt. C. Co. at Hoboken	6 05	....	6 00	6 00	6 15	5 20
Beaver Meadow at South Amboy	6 05	....	6 00	6 00	6 15	5 20
Schuylkill Coals at Port Richmond.						
Schuylkill white ash	4 75	4 85	4 95	5 10	5 60	4 15
Schuylkill red ash	...	....	5 10	5 20	5 65	4 40
Shamokin white and red ash	....	....	....	5 10	5 65	4 45
N. Franklin	....	...	5 55	5 55	5 60	4 30
Lorberry	....	....	5 90	5 90	5 90	4 50
Lykens Valley	....	....	....	6 55	6 55	5 10

† f. o. b. in New York Harbor.

‡ These are the rates for Pittston coal. Buyers having registered contracts will be charged 15 cents less than above prices.

Freight from Hoboken and Weehawken to New York	Per ton. 40c.
" " Elizabethport & Port Johnston to New York	40c.
" " South Amboy to New York	45c.
" " Newburgh to New York	65c.
" " Port Richmond, "Phila." to N. Y. alongside	95c.
" " Rondout to New York by boat or barges of the D. & H. Canal Co. "delivered"	50c.

Retail Prices.

per 2000 lb. are as follows:

	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 00	$6 20	$5 40
Delaware & Hudson, delivered	7 35	7 60	6 85
Scranton, in yard	7 25	7 50	6 80
Wilkes-Barre, delivered	7 10	7 35	6 60
Lehigh & Locust Mountain,	7 50	8 00	7 00
Schuylkill Red Ash	8 25		

Cargo Prices of Bituminous Coal.

Domestic Gas Coals.

	At the Shipping Ports.	Alongside in New York.
Per ton of 2240 lb.		
Westmoreland and Penn, at Greenwich, Phila	$6 25	$7 65
" " at S. Amboy	7 00	....
Red Bank Cannel Pa., at Phil.	8 50	9 50
" " at S. Amboy	9 00	....
" Orrel, "	7 00	7 65
" " at Phil.	6 25	....
Youghiogheny, Waverly Co, at Baltimore	6 00	7 65
Despard, West Va. "	5 50	7 40
Murphy Run, W. Va. at Baltimore	5 50	7 40
Fairmount, W. Va "	5 50	7 40
Newburgh Orrel, Md. "	5 50	7 40
Cannelton Cannel, W. Va., at Richmond.	11 00	12 00
" Splint, " "	5 50	7 50
Peytona Cannel, " "	....	12 50
Sterling " Ohio	....	14 00
Straitsville, " Lyonsdale Cannel	....	11 50
At Sandusky, O.	3 90	....

FOREIGN GAS COALS.

	Sterling.	Am. cur'cy.
Newcastle, at Newcastle-on-Tyne	12/@13/6	7 00@ 8 00
Liverpool House Orrel, at Liverpool	29/	13 00
Ince Hall Cannel "	52/	18 00
" Gas Cannel "	40/	15 00
Scotch Gas Cannel, at Glasgow, nominal.	28/	9 50
	Gold.	
Block House, at Cow Bay, N.S.	2 25	6 50
Caledonia, at Port Caledonia	1 87½	5 70
Glace Bay, at Glace Bay	2 00	5 50
Lingan, at Lingan Bay	2 25	6 50
Sydney, International and Reserve mines, at Sydney	2 25	5 75
Pictou, Albion and Vale mines, at Pictou	2 50	6 50

STEAM AND HOUSE COALS

Broad Top, at the mine, $1 25; at Port Richmond, Phil	4 75@5 00	6 00@6 25
Cumberland, at Georgetown and Alexandria, Va.	4 30@4 40	6 50@6 75
Clearfield, "Derby," "Kitanning" and "Sterling," at the mines, $1 25; at Greenwich, Phil	4 75@5 00	6 25
James River, carbonite, at Richmond, Va	6 75	9 00
" bituminous, "	4 00	6 25

Retail Prices in New York.

Per ton of 2000 lb.

Liverpool House Orrel,	$20 00@22 00
Liverpool House Cannel,	....@25 00
American Block,	16 00@ ....
Straitsville Cannel	16 00@ ....
Carbonite	12 00@ ....

"Erie Line" Agency.

NEW YORK, Sept. 1st. 1874.

Present prices of Pittston and Lackawanna coal delivered along the line of the Erie Railway and branches are forty cents per ton additional to the rates of "Line Circulars No. A, 1874," and upon usual conditions of shipment.

Coal Trade of Philadelphia.

Our correspondence not having reached us we are compelled to omit report of the condition of the Philadelphia coal and iron markets for this week.

Bituminous Coal, Wholesale.

Penn. and Westmoreland (Gas), f.o.b., Greenwich	6 25
Broad Top, (according to destination) f.o.b., Port Richmond	4 75@5 00
Clearfield f.o.b. at Greenwich, according to destination	4 75@5 00

Bituminous, Retail.

$6 00 in yard, per 2240 lb., cartage added.

Prices of Anthracite Coal for Sept., 1874, at Various Points.

Specially reported by the Riverside Coal Co., Wilkes-Barre, Pa. Wholesale, per ton of 2200 lb.

AT	Broken & Egg.	Stove.	Chestnut.
Buffalo, N. Y., f. o. b.	6 55	7 00	6 50
Buffalo, " afloat	6 05	6 50	6 00
Rochester, " "	5 80	6 25	5 75
Weedsport " "	5 50	5 95	5 45
Syracuse, " "	5 10	5 55	5 05
Ithaca, " f. o. b. and afloat	4 95	5 40	4 90
Charlotte, " "	6 05	6 50	6 00
Auburn, " afloat	5 40	5 85	5 35
Elmira, " "	4 75	5 15	4 90
Oswego, " f.o.b	6 05	6 50	6 00
* Chicago, Ill., afloat	6 90	7 35	6 85

* Broken coal for this point is 15 cents per ton less than these figures.

At Lackawanna and Bloomsburg Junction, for line of Pennsylvania and New York Railroad Company, per 2240 lb.:

Broken and Egg, $3 15; Stove and Chestnut, $3 40; Small Stove, $3 90.

Baltimore, Md.

Sept. 16, 1874.

Reported by our Special Correspondent.

WHOLESALE PRICES PER 2240 LB.

ANTHRACITE.

	afloat.	at depot.
Wilkes-Barre, "Lee," or "Diamond,"		
Lump, steamboat	$5 00	$5 40
Broken	5 25	5 50
Egg	5 62	5 90
Stove	5 82	6 10
Pittston and Plymouth.		
Lump, steamboat, and broken	....	5 45
Egg	....	5 80
Stove	....	6 00
Lykens Valley, red ash, all sizes	6 00	6 30

From wharf or yard, wholesale, 50@75c. additional. By retail, all kinds and sizes, per 2,240 lb, $7@8 00.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point for cargoes	4 60 ....
West Va. Gas Coal f. o. b. at Locust Point	5 50 ...
Kanawha Cannel, coarse	13 00 ....
Tyrone	7 25 ....
Kitchie Mineral of West Virginia	1 00 ....

Boston.

Sept. 16, 1874.

Reported by our special correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$5 75	Westmoreland	7 75
Caledonia	5 10	Waverly Co. Youghiogh'y	7 75
Pictou	6 15	Cannelton Cannel	13 50
Block House	5 60	Cumberland	5 90@ 6 20
Red Bank Cannel	10 00	Anthracite,	6 50@ 7 00
Glace Bay	5 40	" Retail	8 00
Sydney	7 25		

From the *Commercial Bulletin.*

Anthracite is moving a little more freely from yards, towards the close of the week, and the market has in consequence lost its melancholy. The demand is wholly for household purposes and does not, in the individual orders, foot up the aggregate for previous seasons.

There is a little more firmness to cargoes. We note the sale of four cargoes, three of them having arrived on early contracts, but the orderers' yards were too full to unload. They all sold for $7 30, through the bridges extra. We notice 25c. difference in cargo offers on stove to arrive, between Philadelphia and New York. Taking common white ash broken, while Philadelphia is offering at $6 50, New York lots demand $6 75; the difference grows out of freights. The stock of broken here is, though light, sufficient for the demand.

Bituminous is dull and unchanged, there not having been business enough to suggest its value.

We quote anthracite cargoes—Stove (w.a.), $7 40; broken, $6 75; retail, $8; Westmoreland, $7 75; Youghiogheny, $7 50; Red Bank Cannel, $10; Cannelton, $13 50; Cumberland, $5 90@6 20: Caledonia, $5 10; Lingan, $5 75; Glace Bay, $5 10; Block House, $5 10; Sydney, $7; Pictou, $6 15.

Burlington, Iowa.

Sept. 12, 1874.

Specially reported by Messrs. WIGHTMAN & CUMMINGS wholesale and retail dealers and shippers of coal.

Continue quotations.

Per ton of 2000 lb.

Lehigh Lump	$15 00	Illinois Smithy	$6 00
Lackawanna	11 00@11 50	" Steam	3 75
Blosburg Smithy	13 00	Connellsville Coke	12 50
Pittsburgh "	10 00	Illinois "	10 00

Buffalo, N. Y.

Sept. 16, 1874.

Reported by our Special Correspondent.

Per ton of 2000 lb.

	Slack.	Nut & Slack.	Nut.	Lump
Connelsville coke				6 50
Sterling cannel				6 00
Red Bank				5 75
Youghiogheny coal for gas				5 50
Briar Hill coal		3 25		5 00
Fairmount "		3 25	3 50	4 25
Catfish "		3 25	3 75	4 50
Stoneboro "	2 75		3 50	

Briar Hill coal, and Sterling and Red Bank cannels, at $8; all other coals $1 per ton above wholesale prices.

Anthracite f. o. b. vessel. Retail prices delivered and screened, $1 per ton additional.

Grate	6 55	Stove	7 00
Egg	6 55	Chestnut	5 60

Chicago, Ill.

Sept. 15, 1874.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

No change in prices of coal at this point. Sales light.

Retail prices per ton of 2000 lb. delivered to buyer.

		BITUMINOUS.	
Lehigh Lump	$10 75	Briar Hill and Erie	7 50@ ....
Leigh prepared and car load lots	9 75	Walnut Hill (W. Va.)	6 50@ ....
Lackawanna, Wilkes-Barre and Pittston,*		Midway (West Va.)	6 50@ ....
Grate, egg, and chestnut.	9 00	Cannel	8 00@ 9 00
Stove or range	9 50	Blossburg	8 00
		Indiana Block	6 00
		Hocking "Brooks"	6 00
		Wilmington and Illinois	5 00

*75 cents off these prices for car load lots to country dealers and manufacturers.

Cleveland, O.

Sept. 14, 1874.

Reported by our Special Correspondent.

Quotations remain as follows:

Per ton of 2000 lb.

Youghiogheny, Pp, f.o.b.	$4 65	Straitsville, f.o.b.	$3 40
Youghiogheny, nut	3 60	Columbiana "	3 40
Briar Hill, (Church Hill)	4 25	Strip Vein "	3 65
" " (Brookfield)	4 10	Mountain Blossburg (blacksmith), f.o.b.	5 75
Massilon, according to quality	$3 40 to 3 65	Darlington and Sterling Cannel, f.o.b.	4 50
Hocking Valley, f.o.b.	3 50	Anthracite, Lackawanna on cars, Egg	$6 85
" " " "		Stove	7 30
" " " "		Chestnut	6 90
Youghiopheny Coke, " "		here	5 50
Connellsville " " "			5 75

Cincinnati, O.

Sept. 15, 1874.

Specially reported by Messrs. A. BUCHANAN & Co., wholesale and retail dealers in coal and coke.

The following are the prices of coal in this market to-day.

Per ton of 2000 lb.

	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	12 c.	$2 86
Pomeroy coal	7½ c.	1 95
Cannel coal	18c.	4 68
Semi Cannel	10 c.	2 60

The following are retail prices delivered:

Yougiogheny	16 c.	$3 90@$
Pomeroy	12 c.	3 12@
Cannel	24 c.	5 72@
Kanawha Semi Cannel	14c.	—— 3 64
Anthracite	——	—— 10 00
Foundry coke	12c.	——
Soft coke	10c.	——

Council Bluffs, Iowa.

Sept. 15, 1874.

Reported by our Special Correspondent.

Prices unchanged.

Per ton of 2000 lb.

ON TRACK.

Blossburg (blacksmith)	$14 00	Wyoming	14 00
Anthracite	15 00	Missouri	6 00
Iowa	4 50	Kansas	6 00

RETAIL.

Blossburg	$16 00	Wyoming	$12 00
Anthracite	16 00	Missouri	8 00
Iowa	6 50	Kansas	8 00

Detroit, Mich.

Sept. 15, 1874.

Specially reported by Messrs. ROBINSON & KEYS, dealers in all kinds of coal.

The exceedingly warm weather of the past week has caused a slight falling off in orders, yet trade is moderately active, and prices unchanged, but firm. We quote:

Per ton of 2000 lb.

Lehigh Lump, per ton	$10 50	Blossburg	8 50
Lehigh " prep. sizes.	9 50	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	8 50	Willow Bank	7 00
Wilkes-Barre, Stove and Nut	9 00	Erie	7 50
		Massillon	7 00

Denver, Col.

RETAIL PRICES.

Per ton of 2000 lb.

Canon	$6 50	Boulder Valley	$4 75
Marshall	5 50	Eulner	5 50
Murphy	5 50	Black Diamond	5 50
Baker	5 00		

Erie, Pa.

Sept. 16, 1874.

Reported by our Special Correspondent.

Wholesale, per ton of 2,000 lb.

Continue former quotations.

Anthracite f.o.b. vessels.

Lump	$6 60	Stove	$6 65
Grate	6 10	Chestnut	6 05
Egg	6 10		

Bituminous f.o.b.

Briar Hill	$4 40	Beaver	$4 25

Retail, per ton of 2,000 lb.

Anthracite.

Lehigh, chestnut	$8 50@$9 00
" prepared	8 75@ 9 25
Lykens Valley, stove	9 50@10 00
Lykens Valley, chestnut	8 00@ 8 50
Schuylkill and Wilkesbarre	7 50@ 8 00
Blossburg (Smithing)	7 50@ 8 00

Bituminous.

Chenango Valley (Ormsby), lump	$6 00
Mahoning Valley (Briar Hill), "	5 00
Nut, all kinds	4 00
No. 1 slack	3 00
Bituminous, by car loads to factories	5 35

Indianapolis, Ind.

Sept. 15, 1874.

Specially reported by Messrs. H. McCOY & Co.

Continue quotations.

Per ton of 2000 lb.

BITUMINOUS.

Best Block coal	$2 90	Indiana cannel	6 50
Best Highland	2 40	Hocking Valley	3 00
Block Nut	1 65	Youghiogheny	5 42
Highland "	1 65	Blossburg (smithing)	7 30
Block slack, per car load	15 00	Piedmont "	7 75
Peytona, cannel per ton	8 50	Gas coke, per bushel	9½c

ANTHRACITE (Lackawanna).

Grate	$8 70	Chestnut	8 60
Egg	8 70	Stove	8 85

Retail, per bushel of 70 lb.

Block	14c.	Peytonia Cannel	32c.
Highland	12	Indiana "	28
Highland Nut	9	Youghiogheny	25
Block "	9	Blossburg	27
Slack	7	Piedmont	30

ANTHRACITE.

per ton.		per ton.	
Grate	$10 50	Stove	$10 50
Egg	10 50	Chestnut	10 50

Louisville, Ky.

Sept. 15, 1874.

Specially reported by Messrs. BYRNE & SPEED.

The following are retail prices.

Pittsburgh, per load of 1900 lb	$3 75
Pomeroy	3 25
Buckeye Cannel	5 50
Peytona Cannel	6 00
Nut and Slack	2 75
Kentucky lump, per load	3 25
" nut, "	2 75
" Slack "	1 60
City-made Coke, per bushel	10c
Kentucky on cars at wholesale, per bush.	10c
Anthracite, per ton	$10 to $10 50

Milwaukee, Wis.

Sep. 14, 1874

Specially reported by Messrs. R. P. ELMORE & Co.

The coal trade still continues to improve, and we hope f

the revival of those better days so prominent within our early recollection.

Retail prices per ton of 2000 lb.

Lehigh Lump	$10 00	Briar Hill, select	$8 50
Lehigh Prepared	10 50	Blossburgh	8 00
Lackawanna	9 50	Pittsburgh	7 50

Mobile, Ala.

September 1st, 1874.

Per ton of 2000 lb.

	On Car or at Yard.	Delivered.
Montevallo, Ala., Slack Coal, (screenings)	$3 00	$4 00
New Castle, Ala., Coal	5 00	6 00
Montevallo Lump Coal, screened	9 00	10 00
Pittsburgh Coal, screened	9 00	10 00
Peach Orchard Coal, Red Ash	10 00	11 00
Virginia Cannel	14 00	15 00
English Cannel	17 00	18 00

The above prices are for car load lots of 10 tons and upward.

New Orleans, La.

Sept. 12, 1874.

Specially reported by Messrs. P. & R. DEVERGES, Wholesale and Retail Dealers in Pittsburgh, Anthracite and Cannel coal.

The market remains dull, with a tendency to advance. We quote:

Pittsburgh coal, retail, per bbl	60c.
" wholesale	40@45c.
" per hhd	$6 00
" to steamboats, per box	50c.
" to manufacturers, per bbl	55c.
Anthracite, retail, per ton	$12 50
" wholesale per ton	$9 25@9 50
Spadra (Arkansas) coal, retail, per bbl	75c.
Mt. Carbon, wholesale, per bbl	45c.
" " retail per bbl	65c.
Scotch Cannel, per bbl	1 00

Pittsburgh, Pa.

September 15, 1874.

Reported by our Special Correspondent.

Continue quotations.

Per ton of 2000 lb. and Bushel of 76 lb.

	per ton.		per ton
Youghiogheny coal	$2 15	Pittsburgh retail delivered per bushel	9c@10c
" coke	2 75	Anth'cite on cars Lehigh	$7 75
Connellsville coal	2 25	" " Wilkes-Barre	6 75
" coke	3 25		
Pittsburgh coal	2 00		

Twenty-five to fifty cents per ton additional for delivery.

San Francisco.

From the *Commercial Herald*, September 5.

Supplies of coal continue ample, and prices of Eastern and some foreign kinds are lower than they have been for a long time. We quote Pacific coast coals, coarse descriptions, at $8 50@10. Foreign, $9 50@12 per ton.

Australian advices continue to note large sales for export to this coast. The present spot price is $9 75@10 for cargo parcels ex ship. The general market favors the buyer for nearly all descriptions. We quote Lehigh, $16@18; Pittston, $13@14.

St. Louis, Mo.

Sept. 12, 1874.

Specially Reported by the COLLINSVILLE COAL AND MINING COMPANY.

ANTHRACITE.

Per ton of 2000 lb.

	City delivery.
Lehigh Lump	$13 50
Lackawanna and Wilkesbarre	12 50
Semi Anthracite	9 50

BITUMINOUS.

Per ton of 2000 lb.

	E. St. Louis.	City delivery
Washington Indiana—smithing	$4 00	$4 87
O'Fallon, Ills.	2 00	3 00
Collinsville and Belleville, Ills.	1 75	2 75
Indiana Cannel	6 00	7 00
Missouri Cannel		5 00

Retail, 25c. per ton additional.

Toledo, Ohio.

Sept. 12, 1874.

Per ton of 2000 lb,

Specially reported by Messrs. GOSLINE & BARBOUR.

Retail.		Retail.
Wilkes-Barre and Scranton, Large and Small Egg,	$8 00	BITUMINOUS.
Stove	8 25	Blossb'g and Cumberl'd, $8 00
Chestnut	8 00	Massillon Lump 6 00
Lehigh Lump	10 00	Briar Hill 7 00
		Braitsville 3 75
		Hocking Valley 4 00

Halifax, N. S.

Sept. 14, 1874.

Reported by our Special Correspondent.

Please revise your quotations as follows:

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 50	Little Glace Bay	3 50
Gowrie	3 50	Blockhouse	4 00
Victoria	3 75	Albion (at Railroad)	4 25

Montreal.

Sept. 12, 1874.

Reported by our Special Correspondent.

No change at this point.

Per ton of 2,240 lb.

Scotch Steam	$6 25@6 50	Cape Breton Steam	$5@5 50
Picton "	6 00@6 25	Newcastle Smiths,	8@8 25

Anthracite at retail, 2,000 lb., delivered:

Egg	$8 00	Nut	$8 00
Stove	8 50		

Toronto, Ont.

Sept. 12, 1874.

Reported by our Special Correspondent.

The prices and terms of the Toronto Coal Exchange remain as follows:

ANTHRACITE.

	per ton.		per ton.
Broken	$7 65	Chestnut	$7 65
Egg	7 65	Lehigh	9 00
Stove	8 15		

BITUMINOUS.

Blossburgh	7 50	Screenings	5 00
Briar Hill	7 00	Soft Nut	4 50

Rates of Transportation on Anthracite Coal to Tide Points.

From Mauch Chunk to New York "towing limits," via Lehigh Valley R. R.	$2 60
From Mauch Chunk to Jersey City "for reshipment," via Lehigh Valley R. R.	2 40
* *From Phillipsburg to Hoboken* "for shipment," via Delaware, Lackawanna & Western R. R.	1 28
† *From Penn Haven to Elizabethport, Port Johnston and Hoboken*, via Central railroad of New Jersey	2 35
‡ *From Mauch Chunk to Elizabethport, Port Johnston, Hoboken and South Amboy*, via Lehigh Valley R. R.	2 20
From Port Delaware to New York and Jersey City, via Morris Canal	1 71
From Mauch Chunk to Philadelphia via N. P. R. R.	1 75
From Schuylkill Haven to Philadelphia, via canal. Freight 65c., tolls $1 10	1 75
From Tumaqua to Port Richmond "for shipment," via P. & R. R. R.	2 07
From Schuylkill Haven to New York, via canal	2 72

On canal coal at Jersey City an additional charge of 20 cents per ton will be made for transferring coal from boat to boat, and thirty cents per ton for placing the same on the wharves and re-shipping.

The rate on coal for way-points on the New Jersey railroads will be $1 15 per ton from Mauch Chunk to Phillipsburg.

* 52 cents additional to this rate is added on coal for consumption.

† The rate from Phillipsburg to these points is about $1 per ton less. This rate does not include wharfage or shipping expenses at tide ports.

‡ From Penn Haven to these points it is 15 cents additional, and from Phillipsburg the rate is 89 cents less.

Freights on Bituminous Coals from the Mines to Tide-Water Shipping Ports.

From the Mines to Cumberland and State Line (say an average of 20 miles) the charge is 3 cents per ton of 2240 lb. per mile.

From State Line to Amboy, (346 miles) $4 00 per ton of 2000 lb. On coal shipped beyond that point there is a drawback of 50 cents per net ton.

From Cumberland to Baltimore, (178 miles) $2 58 per ton of 2240 lb., or $2 30 per net ton, and 4 cents per gross ton for use of cars.

From Cumberland to Georgetown, (152 miles) by canal, $1 76 per ton of 2240 lb. *To Alexandria, Va.*, 11 cents per ton more.

From the Mines to Piedmont, (from 4 to 10 miles) 5 cents per ton of 2240 lb. per mile on distances less than 5 miles, and 4 cents per ton per mile on distances not over 10 miles.

From Piedmont to Baltimore, (206 miles) $2 97 per ton of 2240 lb., or $2 65 per net ton.

From any point in the Kanawha Valley to the James River wharves below Richmond (say 350 miles) by C. and O. R. R., including terminal charges, per ton of 2000 lb., for Cannel coal, $5 35. Subject to rebate on large quantities.

Do., do., for Semi Cannel or Splint, $3 65.

From Hawks Nest to Richmond (say 300 miles) the freight on Bituminous or Splint is $3 25 per ton of 2000 lb; on Cannelite it is $5 00.

From Irwin to W. Phila. (say 332 miles) per P. R. R. Penn. Westmoreland gas coal, per ton of 2000 lb. $5 00

From Osceola to W. Phila. (say 248 miles) per T. & C. R. R. per ton bituminous coal of 2000 lb. 3 55

From Fairmount and Clarksburg to Baltimore (say 300 miles) via B. & O. R. R. including loading, per 2000 lb. 5 20

On through coal after deducting drawback 4 15

From Richmond, Va., to New York, 392 miles per 2000 lb. 2 10

" " " Boston about 650 " " 3 00

" " " Philadelphia 292 miles " 1 75

From the Mines to Richmond via James River and Kanawha Canal, 15 miles 52

Freights.

We have no change of any consequence to note with regard to freights; rates are somewhat firmer than quoted in our last, but charters would readily be accepted at our quotations as given last week. The rate to Boston is quoted at $1 25; Providence, Fall River and New Bedford, $1 00; New London, 90c.; New Haven and Bridgeport, 70c. Philadelphia to Boston is quoted at $1 50. We note the charter of a 1,120 ton bark from Baltimore to Boston at $1 30. Our quotations fix the rate between these points, for ordinary vessels at $1 40.

Delaware and Raritan Canal.

Tolls and Steam Towage for August, for Cargoes exceeding 110 Tons.

Anthracite coal,	Fairmount to New York	74	c.
" "	Port Richmond " "	68	c.
" "	Lambertville " "	62	c.
" "	Trenton " "	37	c.
Bituminous "	Greenwich " "	66½	c.
Cumberland coal,	Philadelphia " "	65½	c.
Semi-bituminous,	Port Richmond " "	65½	c.
Anthracite coal,	Bordentown to New Brunswick, exclusive of towage	40	c
Bituminous and semi do.,	Bordentown to New Brunswick, exclusive of towage	37½	c.

Geneva, Ithaca and Athens R.R. Co.

COAL TARIFF.

Per ton of 2240 lb.

From Lackawanna Junction to State Line on Coal for all points on the G., I. and A. R. R. (excepting Geneva) and C. L. RR.	2 04
From State Line to Ithaca for Buffalo, Rochester, Syracuse, and all other points via Erie Canal	56
From State Line to Ithaca for all local points on C. L. R.R. " " " " all points on N. Y. C. and H. R. RR., excepting Buffalo, Rochester, Charlotte, Geneva and Cayuga	9
From State Line to Ithaca for Phelps (Sodus Point and Southern and L. O. Shore RR's)	57
*From Lack. and B. Junction to *Buffalo*, all rail via Geneva (Through Rate)	59
From Lack. and B. Junction to †Rochester, all rail via Geneva (Through Rate)	3 76
From Lack. and B. Junction to Phelps, (for S. P. and S. and L. O. S. RR.'s via Geneva)	3 26
The above rates are for a consignment of not less than 25 gross tons.	3 01

* Via Canal from Ithaca 41 cents less.

† Via Canal from Ithaca 30 cents less.

Erie and Champlain Canals.

NEW YORK AND SHIPPING POINTS IN THE VICINITY TO

Per ton of 2240 lb.

* Buffalo and Lockport	$1 85	* Utica, N. Y	1 25
* Rochester	1 75	* Syracuse, N. Y	1 35
* Burlington, Vt.	1 75	*Oswego, N. Y	1 70
Albany	85	Troy	90
* Alongside.			
*Montreal, Canada, gold.	$2 75	Ottawa, Canada	3 25
St. Johns, N. B.	2 50	Quebec	3 25
* Harbor towing extra			

Freight on Pittston Coal—From Newburgh.

By boats of the Pennsylvania Coal Co., per ton of 2240 lb.

To Troy, Albany and Stuyvesant	60 c
" Nyack and Hudson and Boston R.R. dock, Hudson, discharged to cars	50 c
" Hudson, except as above, Rondout and Poughkeepsie	35 c
" Catskill, at mouth of creek, Sing Sing, Tarrytown, Piermont, and Yonkers	55 c
" Fishkill Landing and West Point	25 c
" Peekskill, Haverstraw, Saugerties, and Tarrytown	45 c
" New York	65 c

Coal Freights from the Anthracite Mines to the Principal Markets.

We refer to our issue of July 11th any one desirous of consulting the above.

Towing.

Per ton of 2240 lb.

FROM NEW YORK TO POINTS ON THE HUDSON RIVER.

	per ton.		per ton.
Manhattanville	8 c.	Haverstraw	17 c.
Spuyten Duyvel	9 "	Verplanck's Point	17 "
Yonkers	10 "	Peekskill & Newburg	18 "
Hastings	11 "	West Point & Cold Sp'g	20 "
Piermont & Dobbs Ferry	13 "	Poughkeepsie	22 "
Nyack & Tarrytown	15 "	Rondout	23 "
Sing Sing	16 "	Hudson	25 "
Croton Landing	17 "		

Boats of 100 tons and under—per boat.

Manhattanville	$11 00	Spuyten Duyvel	$13 00
Yonkers	15 00	Tarrytown	18 00
Sing Sing	20 00	Peekskill	20 00
Newburgh	25 00	Poughkeepsie	30 00

ON LONG ISLAND SOUND.

	per ton.		per boat.
Norwalk & Bridgeport	33⅓ c.	Port Morris	$20 00
New Haven	33⅓ "	West Farms, mouth of Creek	25 00
Derby ($50 per b't extra)	33⅓ "	West Farms	35 00
Southport & Westport	40 "	West Chester	30 00
Milford	40 "	Flushing & White Stone	30 00
Branford	45 "	College Point	25 00
New London	60 "	East Chester Town Dock	60 00
Middletown	65 "	New Rochelle & Glen Cove	50 00
Norwich	66 "	Mamaroneck & Port Chester	70 00
Hartford & Stonington	75 "	Greenwich, Stamford & Darien	75 00
Mystic	75 "		
	per boat		
Harlem	$18 00		
Mott Haven	18 00		

Harbor Towing.

From Hoboken to	Loaded.	Light.
53d st., towing limits per boat	$6 00	$5 00—$11 00
Gowanus " "	6 00	6 00— 14 00
Newtown Creek " "	10 00	9 00— 19 00
Port Johnston " "	9 00	9 00— 16 00
130th street, North River "		— 18 00
From East River to Weehawken and return to East River	9 00	7 00— 16 00

To 61st st., $12 extra; to 79th st., $14 extra; to 93d st., $16 extra.

REVIEW OF THE BRITISH COAL AND IRON TRADES.

Compiled from our Exchanges bearing date to Sept. 4, 1874.

London.—The receipts of Coal at the Port of London for the first eight months of 1873, from all sources, were 5,295,970 tons. For the corresponding period in 1874 the receipts amount to 4,977,025 tons.

Showing a decrease in trade, as compared with last year, of 295,970 tons.

The unaccountable position which the Northumberland and

Durham miners have taken, viz.: a demand of 15 per cent. advance in wages in response to the masters' claim of 20 per cent. reduction of the same, still unsettles and prolongs the uncertainty of both the Coal and Iron Trades. The districts referred to represent about one-seventh of the coal producing regions of the country.

House coals have been firm during the week under review, with an advance of 6d. per ton in the best qualities. Original Hartlepool being now quoted at 25/, and from that the prices range down to West Hartley, which is held at 21/.

The Iron market is firm, with a slight decline as compared with our last. No. 1 Scotch Pig is held at 109/ f. o. b. at Glasgow.

Northumberland, Durham and Cleveland.—There was an average attendance on 'Change at Middlesborough on Tuesday. There is not at present the same demand for No. 3, whilst No. 4 is rather more in demand. Makers quote No. 3 at from 68/ to 71/; but merchants are offering it as low as 67/ 6d. No. 4 may be put down at from 58/ to 60/. The finished ironworks are now settled to work after the holidays with a better prospect than before. Inquiries are more numerous for rails, and a few Continental orders are fully expected to be placed in this district. Quotations for finished iron are pretty much the same as last week. The coal and coke trade is rather easier, with a fair demand for steam coals, and nearly all the pits are at full work; the gas and house coal collieries are also at full work, being desirous of getting all their tonnage supplied before the expiration of the notice for a reduction of wages, as there seems every indication that the pitmen will resist the reduction. The best unscreened coals are quoted at 10/ to 11/; manufacturing, 6/ to 7/.

Barrow-in-Furness and North Lancashire.—All departments of the iron trade are in full work, and there seems some reason to believe that prospects are improving. It could not be expected that trade would immediately assume a briskness after such a period of depression as that which has existed for some time, but which we are now evidently leaving for a better state of things. Little by little trade seems to improve, and in the course of a few months we may expect better relationships in every direction. Bessemer iron is in good demand, and many inquiries have been made this week with a view to purchases. Prices cannot be said to have altered. An improvement has taken place in the request for hæmatite forge iron, but makers could dispose of more than they are selling at present. Other departments of trade are fairly employed. Coal cannot yet be purchased at cheaper rates.

Barnsley and South Yorkshire.—The tone of the iron trade in this district remains in much the same state as last week. Most of the works are kept in pretty regular motion, and the district will compare very favorably with other iron-producing localities. The coal trade is brisker than it has been since the men have gone to work. At some of the pits a goodly number of empty wagons are standing, and at comparatively few pits any stocks are to be found on hand. A tolerable tonnage of house coal is being sent to the metropolis. Scarcely an average business is being done in coke, but a good deal is still sent to North Lincolnshire. Notices have been given in the West Yorkshire district for another reduction of 20 per cent. Considerable progress is being made with the sinking and opening out of the new collieries.

Forest of Dean.—An improvement in the district house-coal trade is confirmed this week, rendering necessary the running of special trains to the Cinderford Valley, and enabling the colliery proprietors to find more regular employment for their men. Remembering that merchants during the summer months have purchased only on the hand-to-mouth principle, and there are no stocks in the country, hope is inspired that the more favorable state of things which is now manifest will not prove temporary. No alteration has been made in quotations, which remain as they have been for some few months past. A decidedly better state of demand has arisen for pig-iron, and the stocks which for a long time have been accumulating are being rapidly reduced.

Cardiff.—Although we cannot quote an advance on our last quotations for rails, etc., we have to report a much more buoyant market, with brighter prospects. The wages question being almost settled, we hope next week to notify a still greater improvement in the iron trade throughout this district. For steam coal we are unable to name a large rise in our market, but last week's quotations have remained firm, and in a few cases a shilling per ton extra has been obtained for ready shipments. The arrival of tonnage has been, during the last few days, quite up to an average, and our docks are well filled with vessels waiting here for loading. Demand for house coal quiet, and prices rather tend below our last figures. For coke a more steady inquiry has set in, and an increase in price may be expected. Iron ore is still almost unsaleable, but a demand for this may take place ere long.

Glasgow.—The warrant market has been firmer during the past week, and there has been more business doing. To-day, market strong. Warrants, 81/, sellers. Makers' prices are rather lower. Coltness ranges from 110/ to 86/; Eglinton, 86/ to 78/. The strike in Fife and Clackmannan has not sensibly affected the coal trade in the West, although such a result must follow if the struggle is prolonged.

The amount of Scotch Pig in store at Glasgow, on the 4th of September, was 19,722 tons, being 22,022 tons less than at the same period in 1873.

IRON MARKET REVIEW.

Import Duties.

The following are the duties in Gold on Iron:

Flat Iron, not less than 1, nor more than 6 inches wide, nor less than ⅛, nor more than 2 inches thick. *Round Iron*, not less than ¾, nor more than 2 inches in diameter, and *Square Iron*, not less than ¼, nor more than 2 inches square ₰ lb. 9-10 of 1c. *Flat Round or Square Iron*, of larger or smaller sizes than the above mentioned, per lb 1 35-100

Provided, that all iron in slabs, blooms, loops, or other forms, less finished than bars, and more advanced than pig iron, except castings, shall pay the same as iron in bars.

Provided, that none of the above iron shall pay less than 31½ per cent.

Railroad Iron	630. per 100 lb.
Boiler plates, or other plate iron not less than 3-16 of an inch thick, per lb	1 35-100 c.
Scrap castings per ton	$5 40
" *wrought* " "	7 00
Pig iron per ton	6 30

Iron ore 10 per cent. *ad valorem*.

New York.

Sept. 18, 1874.

There is still the same lethargic condition to report in our New York iron market; no sales of importance, and very little demand, though there are a few orders in the market that we will probably be able to report as transactions next week, and generally a "dull and drooping" market.

When, some weeks ago, we quoted best brands No. 1 Lehigh irons at $30@$32, and stated that some of the companies with large stocks had actually refused $31, we, better informed than they, candidly stated our belief that "the bottom" had not been reached, and that iron would go still lower. These companies to-day quote $30. In fact, for many months it has been our unpleasant duty to report the heavy iron trade less favorable than was stated in the glowing reports of many of our contemporaries. We are as desirous as they can be to note the first sign of reviving business, but our first duty is evidently to report the facts as we find them, and not as we would have them. Good No. 1 anthracite iron can to-day be bought in this market for $29, and the best for $30. A few weeks ago this could not be done, yet there has been no sudden break in prices; the process of "shading" leaves no abrupt lines, but the upper and lower limits graduate off in exceptional transactions that are not the market but that indicate the course and tendency of prices. "Are we at the bottom yet?" is a question often asked in the trade. And the answer of not a few dealers is, that they would like to get heavy orders for iron at present prices, to be delivered in the next two months.

Now that our production capacity is fully equal to our consumptive demand, and we are importing practically no heavy irons, and we hope and expect will soon cease importing steel rails, the changes in the foreign markets are of less importance to us than they formerly were. But we have at home a new condition of things to be studied. We can produce more iron than we use, and a very small overstock in a market that has no outlet beyond home consumption, will always have a depressing effect quite out of proportion to the amount of stocks. The regulator and balancer that we need in our own trade is a foreign outlet, and to obtain this we must reduce the cost of manufacture to a point that will enable us to compete with England in her foreign trade. We are even now doing this successfully in our edge tools, locomotives and several other articles. A general lowering of cost, and particularly a more economical use of materials, and closer management at our works will enable us to increase enormously our foreign trade and stimulate at the same time our home consumption.

This is a subject that will stand repetition, and we are glad to see some of our "iron" contemporaries following our initiative and devoting some attention to it.

We understand a proposition has been made to its men by the Scranton Mill, offering wages based on $3 50 for puddlers. Should the men accept work, which has been suspended since April, it will be at once resumed, though the company has on hand a large stock of puddle bars and rails. The present condition of the market should convince the men that "half a loaf is better than no bread," and the approach of winter with so many out of employment must make the prospect so gloomy that there should be no hesitation in accepting even this heavy reduction on old rates. We are informed that some other works, desirous of keeping their men together, are disposed to make somewhat similar propositions, though "orders" do not justify the reopening of the works.

In other metals than iron a very brisk and improving business is being done, with a generally rising market.

American Pig.—There have been no large transactions, the jobbing sales footing up a few hundred tons. No. 1 Lehigh is quoted at $30; No. 2, $28; forge, $25@$27, but even these prices are "shaded."

Scotch Pig.—There is scarcely any in this market, a few hundred tons covering the entire stock. We quote prices firm at Eglinton, $35; Carnbroe, $36; Glengarnock, $37. There has been little change in the Glasgow market. Our mail advices to the 4th September quoting Gartsherrie, 109/; Coltness, 107/ 6d.; Carnbroe, 90/; Eglinton, 85/; Glengarnock, 95/; while cable telegrams of a late date quote in general an advance of 1/@1/ 6d. The number of furnaces in blast in Scotland was 112, out of blast 44, and the stock in store at Glasgow 19,722 tons against 41,744 tons same date last year. There is now a smaller stock than at any time in the past 40 years.

Rails.—There have been no transactions in new rails during the week. We quote at $48@$50, gold, for foreign, and $55 to $58, at the works, for American.

Old Rails.—We note the sale of 1,000 tons Ts at private terms. We quote $32@$33.

Scrap Iron.—We note sale of 600 tons for delivery in New Bedford at $36 delivered. This is considered a "good sale." We quote at $34@$35.

Boston.

September 12, 1874.

From the *Commercial Bulletin*.

Pig.—The market is at a stand. We noticed a small lot, say about five tons, on a truck, Wednesday, peddling along Commercial street for an offer, which was finally dumped at Locke's door, at what the driver said wasn't enough to pay for carting. This is a sample instance of the whole trade; any one offering iron finds it impossible to secure a purchaser, and only when a sacrifice is made will a user condescend to talk. The lot above noted was a sample of a low grade. The sheds on Fisk's and Comey's wharves are well filled; the piles increased rather than diminished, but yet the price holds. The freight sheets do not show over 15 tons railroaded out of Boston, while a small lot delivered on the Eastern Packet wharf for Bangor is all the Pig reported shipped. The drays that team to the local and near-by foundries have been idle. These are facts that may assist shippers of pig iron to realize that just at present Boston has sufficient. The assortment is not perfect, but so far as value will admit stocks are showing remarkably full.

Bar is dull. A few lots of short plates for the Portland Rolling Mill, and eight or ten tons bar for a Providence dealer, have been delivered from Constitution wharf, and embrace the largest trade of the week, and a few blacksmith's and sleigh builders' orders have been received, and have generally been express shipments, note the doings from stores. There is some small inquiry from country dealers, but it resolves itself to a testing of the disposition of the market, the weakest holders not gaining any material trade.

Steel is slow. Shovelmakers are still looking for the lots at 11c., which rather confirms the statement that it is a disposition to break the market rather than ability to buy. Tool steel is dull.

We quote yard lots of American Pig Iron at $36@$39 per ton, including No. 2 extra at $34@$36, and No. 1 at $38. We quote Eglinton at $38, Coltness Gartsherrie at $45@$46, Charcoal at $45@$55.

Chicago

Sept. 15, 1874.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

Quotations remain as follows:

No. 1 Coltness	$46 00@ ....
No. 1 Gartsherrie	45 00@ ....
No. 1 Summerlee	44 00@ ....
No. 1 Glengarnock	42 00@ ....
No. 1 Eglinton	40 00@ ....
Warner's "American Scotch"	41 00@ ....
Massilon No. 1 Foundry	37 00@ ....
No. 1 Grand Tower Mo. ores (Bituminous)	35 00@ ....
No. 2, " " "	32 00@ ....
No. 1 Mill	31 00@ ....
Union "A" 1 (Anthracite)	34 00@ ....
Union "B" 1 (Anthracite)	32 00@ ....
No. 1 Lake Superior (charcoal)	36 00@ ....
No. 2 Lake Superior "	34 00@ ....
No. 3 Lake Superior "	30 00@ ....
No. 4 Lake Superior "	42 00@ ....
Bessemer Steel Rails	90 00@95 00
New Iron Rails	53 00@ ....
Old Rails	28 00@ ....

Cleveland.

Sept. 14, 1874.

Specially reported by Messrs. C. E. BINGHAM & Co., dealers in pig iron and iron ore.

Market firm, at prices below, on 4 months time. Discount for cash, 3 per cent.

No. 1, Anthracite Foundry	$35 00@....
No. 2, " "	34 00@....
No. 1, Bituminous "	32 50@....
No. 2, " "	30 50@....
No. 1, " Gray Forge	28 00@....
No. 1, Massilon Black Band	36 00@....
No. B-1 " "	34 00@....
No. 2 " "	32 00@....
No. 1, Lake Superior Charcoal	34 50@....
No. 2, " "	33 50@....
No. 3, " "	36 50@....
No. 4, " "	38 00@....
Nos. 5 and 6 "	40 00@....
American Scotch, No. 1, Cherry Valley	34 00@....
" " No. 2	31 00@....

Cincinnati.

Sept. 15, 1874.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

The improvement so confidently expected this fall has, as yet, not made its appearance, and the market continues dull and depressed for all descriptions of pig iron.

Quotations remain without change.

CHARCOAL.

Hanging Rock, No. 1, Foundry	$33 00@34 00—4 mos
" No. 2, "	30 00@32 00—4 mos
Mill	28 00@29 00—4 mos

Tennessee No 1, Foundry	31 00@32 00	4 mos
Tennessee. No. 2 "	30 00@31 00	4 mos
" Mill	28 00@29 00	4 mos
Missouri, No. 1, Foundry	34 00@35 00	4 mos

STONE COAL.

Ohio No. 1, Foundry	30 00@32 00	4 mos
" No. 2, "	29 00@30 00	4 mos
Ohio Mill	27 00@28 00	4 mos
Missouri, No. 1, Foundry	31 00@32 00	4 mos
" No. 2, "	29 00@30 00	4 mos
" Mill	28 00@29 00	4 mos

CAR-WHEEL.

Hanging Rock, C. B.	50 00@55 00	4 mos
Tennessee "	45 00@48 00	4 mos
Missouri "	45 00@48 00	4 mos
Alabama "	45 00@48 00	4 mos

BLOOMS.

Charcoal	80 00@ 90 00	—cash

SCRAP IRON.

Cast	80@ 90	—cash
Wrought	1 25@ 1 50	—cash

Indianapolis, Ind.

Sept. 12, 1874.

Specially reported by NELSON KINGMAN, broker and dealer in pig iron, etc.

Present quotations are as follows:

New Rails at mill	$62 00@64 00	
Old Rails "	30 00@31 00	
Hanging Rock Charcoal Pig No. 1 foundry	35 00@36 00	4 mos
" " " " " 2 "	32 00@33 00	4 mos
" " " Mill	29 00@31 00	4 mos

STONE COAL.

Indiana No. 1 Foundry pig Planet furn'e.	32 00@34 00	4 mos
" 2 " " "	31 00@32 00	4 mos
" 1 Forge " "	29 00@	4 mos
" 2 " " "	27 00@	4 mos
Ohio No. 1 Foundry pig	33 00@34 00	4 mos
" 2 "	31 00@32 00	4 mos
" 1 mill	28 00@30 00	4 mos
Merchant Bar, card rates	60 00@62 00	3 mos
1st quality C. H. No. 1 Boiler Plates, per lb.	5¾@6 c.	3 mos
1st " Com Sheet, for No. 24, W.G. "	5 c.	3 mos
1st " Charcoal Sheet " " "	6 c.	3 mos
Best Bloom Galvanized Sheet, discount 20 per cent		—cash.
2d quality " " " 30 "		—cash.

f. o. b. in Indianapolis.

Louisville.

Sept. 15, 1874.

Specially reported by GEORGE H. HULL, Esq.

The market remains about the same as at last report Cold blast irons are neglected, and quotations for this class must be regarded as nominal. The demand for hot blast is light, and prices are without material change.

The usual time, 4 months, is allowed on the quotations below.

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock ores	$32 00@34 00	
No. 2 " " "	29 00@30 00	
No. 1, forge, " "	27 00@28 00	
No. 1, foundry, " Tennessee "	30 00@32 00	
No. 2 " " "	28 00@29 00	
No. 1, forge, " "	26 00@28 00	
No. 1, foundry, " Alabama "	30 00@32 00	
No. 1 " " Iron Mountain "	32 00@34 00	

HOT BLAST—STONECOAL.

No. 1, foundry, from Missouri ores	33 00@34 00	
No. 2, " " "	30 00@31 00	
No. 1, forge " "	29 00@30 00	

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock ores	50 00@55 00	
" " Tennessee "	46 00@48 00	
" " Alabama "	48 00@50 00	
" " Georgia "	48 00@50 00	
" " Missouri "	45 00@48 00	
" " Kentucky "	48 00@50 00	

Milwaukee, Wis.

Sept. 14, 1874.

Specially reported by Messrs. R. P. ELMORE & Co.

The iron trade at this point is decidedly improving, with quite a number of good sales to report. Prices are as follows:

Per ton of 2,240 lb.

Scotch ranges	$40 00 to $45 00
No. 1, Lake Superior Charcoal	36 00 to 38 00
" 2, " " "	34 00 to 36 00
" 1, " " Anthracite	35 00 to 36 00
" 2, " " "	33 00

Pittsburgh, Pa.

September 15, 1874.

Specially reported by A. H. CHILDS, Esq., commission merchant for the sale of pig iron, blooms, ore, &c.:

There is no improvement to report in pig iron, and the outlook is not very encouraging. The best brands are offered freely at $26 50, 4 months, but buyers seem to have little confidence in even this figure being maintained, and purchase only for immediate use.

Quotations are:

No. 1 Foundry, anthracite or bituminous	$29 00@30 00	4 mos
No. 2, " " "	27 50@28 00	4 mos
Gray forge " "	26 00@27 00	4 mos
White and mottled " "	24 00@25 00	4 mos
Hot blast charcoal	30 00@35 00	4 mos
Cold " "	45 00@55 00	4 mos
Blooms, as per quality	80 00@90 00	4 mos

From the *American Manufacturer* of September 16.

PIG IRON.

The general position of the market remains substantially as noted in our last review, hence there is but little that is really new or important to record. Business continues quiet; the demand is still restricted entirely to supplying immediate wants, as consumers generally appear determined to adhere to the hand-to-mouth policy, to carry no more stock than is absolutely necessary, while, as regards prices, there has been no quotable change. However, notwithstanding the mills appear resolved to buy only for immediate wants, and while it is probable this course will be adhered to during the balance of the year, we look for an average consumption, as the mills are, with one or two exceptions, all running, some of them working double turn, and it follows, therefore, if buyers continue to take small lots, that they will be obliged to buy often. Prior to the panic, nearly all the mills made it a point to carry from one to three months ahead; but now, as already intimated, an entirely different course is pursued, and, in the present unsettled and unsatisfactory condition of trade, it is, no doubt, the wisest and safest. The outlook for the producing interest is not as encouraging as could be desired, as, in addition to the fact that there is no margin for profit, trade is dull, and the general position of the market is not as favorable for an advance now as it was a month ago; indeed, there has been a slight decline during the time in question. Producers had hopes of being able to realize better rates as soon as the Fall trade sets in; they expected to obtain cost, and possibly a slight margin for profit, and some of them, as we noted at the time, were holding their iron out of the market in consequence; but the prospect is not as encouraging now for an advance as it was then, and we understand that some of the furnace-men, who were unwilling to sell, in hopes of better rates, are now willing to meet the market.

SCRAP IRON AND STEEL.

The scrap iron trade continues very dull and unsatisfactory; but dealers, notwithstanding they have been badly disappointed in the course of the market, thus far, are still hopeful of a better condition of affairs in the immediate future. The scrap trade has been very unsatisfactory ever since the panic, and while dealers may have been able to make a little money on stock bought and sold since that time, they lost considerably in depreciation on stock contracted for before the panic. However, they nearly all did well for several years prior to the panic, and they, like other people, must be satisfied to take good and bad together.

MANUFACTURED IRON.

An adjourned meeting of the Manufacturers' Association took place on the 9th inst., the main object of which was to ascertain, if possible, the effect of the recent advance upon the market. The meeting, we understand, was well attended, distant points being represented in person or by letter, and the reports were generally favorable. While, as it was expected it would, the advance curtailed the demand somewhat, the mills represented were reported as having about all they could do, many of them were well supplied with orders before the advance was made, and but little doubt is entertained that, by the time the old ones are worked up, new ones will have commenced to come in again. There appears to be no reason to doubt but that the mills will have all they can do during the balance of the year, as stocks, both in the hands of jobbers and consumers, must be comparatively light, in view of the fact that they have been buying sparingly for several months past, and manufacturers are determined to insist on rates that will afford a fair margin, and to this they are certainly entitled.

The following sales are reported for the week ending the 16th inst.:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORES.

10 tons No. 1 foundry	$29 00	4 mos
50 " No. 2 foundry	27 50	4 mos
60 " No. 2 foundry	27 00	4 mos
790 " gray forge	26 50	4 mos
250 " mottled	25 00	4 mos
50 " white and mottled	24 00	4 mos
100 " " "	24 00	5 mos

ANTHRACITE.

20 tons No. 1 foundry	$31 00	4 mos

CHARCOAL.

60 tons No. 1 foundry, Hanging Rock	$38 00	4 mos
10 " cold blast, Eastern	50 00	4 mos
25 " " " Georgia	43 00	4 mos

COKE.

10 tons No. 1 foundry	$29 00	4 mos
10 " No. 2 foundry	27 50	4 mos
10 " " "	27 00	4 mos
100 " gray forge	25 50	cash
100 " " "	26 50	4 mos

Note.—In our reports, very little of the iron made in the city is included, as in most instances the parties owning the furnaces use the iron in their mills. This will add from 3000 to 3500 tons per week to our report.

METALS.

NEW YORK, Sept. 18, 1874.

Gold Coin.—During the week past, gold has ranged from 110 to 109¾, and closed yesterday at 109¾.

Bullion.—Fine silver bar is quoted at $1 26⅛@$1 27¼, gold, per ounce, and fine gold bar at par ($20 67, gold, per ounce.)

Copper.—The copper market has been steadier during the week with a downwad tendency. Sales have been made at 21c, and 20¾c. is named for Baltimore. Transaction have been light.

Cable telegrams from London on the 16th quote Chili at £78 10/@£79.

Messrs. VIVIAN, YOUNGER and BOND report from London date September 4, as follows:

"During the first half of the past month prices were fairly maintained for most descriptions of copper, though transactions were limited, and there was a general slackness throughout the trade. Prices declined 20/ to 30/ per ton, and at length buyers were found for fair quantities of all sorts at the reduced quotations, and the announcement that the American copper previously hanging over the market had been taken over by an influential house, gave more confidence to speculators. Chili bars, which had declined to £75 10/, became in demand, and a good quantity was taken up to £77 10/ for ordinary, £78 for named, and £79 5/ for special brands, part for arrival. In fine sorts nothing much has been reported, Wallaroo being still held for relatively higher rates, £87 10/ up to £88 being paid; Burra cake £86@£87, and ingots of various brands £84 10/@£88 as in quality. At the Swansea Ticketing on the 31st inst., 1615 tons British and foreign ores sold at an average of 15/ 1⅛d per unit for an average produce of 19⅛ per cent., Cape ores of 35 per cent. fetching 15/ 5⅛d per unit. 1700 tons Chilian Regulus have sold at 12/ 3d@15/ 7½d, part to arrive, and 1000 tons ores at 15/ per unit. In Manufactured a fair business in sheets for Russia at about £90, and prices are again firmer."

Lead.—Government has advanced the price to 6c. gold. We note sales of about 50 tons government, 150 tons domestic, and 100 tons Western, at prices ranging from $5 90 to $6 05.

The government has disposed of about 2000 tons of its stock, and has brought about 320 tons from the Troy arsenal to this place. There is an active demand and good business being done. At present prices which we quote, 6@6¼ cents, western lead can be put in this market with a good profit to shippers; it is now being offered here at these prices, so that it seems improbable that there will be any advance beyond our quotations for the present.

Tin.—Pig tin is firm and there is a good demand. We quote: L. & F. 21c., Refined 21¾@22c., Straits 22¼, gold. Stocks are small.

Cable advices of the 16th announce a considerable advance, Refined being quoted at 99/@102/ per cwt.

Tin Plates.—There is a moderate demand, and prices have remained about as previously reported, 9¾@10¼c. gold for I. C. Our English advices quote Charcoal I. C. plates, f. o. b., London, 37/@38/.

Spelter—Is in good demand, and may be quoted at 6⅝@6¾c. Our English advices announce an advance of about 5/ per ton from the lowest point, and quote Silesian (ordinary Brands) £22@£22 5/; Special Brands from 5/ to 10/ extra.

Zinc—Is firm, with small stocks. We quote at 8@8¼c., gold, for American and foreign.

Antimony—Is quoted nominally at 11¼@11¾c., gold.

Manganese.—Full supplies of New Brunswick Manganite are coming in, and are offered for export to Europe; from Georgia, likewise, a better quality of 80 per cent. is in market. Real Pyrolusite, in crystal, 7c.; imported from Saxony, 8c.; Virginia hard Psilomelane, 3c.; Georgia, mixed, $40 per ton; New Brunswick, 65 and 75 per cent., 3½c. per lb.

Quicksilver.—The price has not been advanced at San Francisco, as was anticipated. It is still quoted $1 45. In London, it is quoted nominally £23 per flask (75 lb.) The New York market is a very limited one, and it may be quoted at $1 55@$1 60.

New York.

September 17, 1874.

The transactions in the following list have been very extensive during the past week. Our quotations show a slight advance in nearly all of the items; 2500 shares of Lehigh Navigation changed hands to-day, at from 45¼ to 45⅝. A quarterly dividend of 2½ per cent., equal to $1¼ per share, has been declared by the Reading Railroad Company, payable on the 23d of October.

The following were sold at auction to-day by Mr. Adrian H. Muller: 1000 shares Quicksilver Mining Company, Preferred, $100 each, sold at 38 to 38⅜; 500 shares Maryland Coal Company, $100 each, 18⅝; 10 shares Cumberland Coal and Iron Company, 100 each, $40 per share.

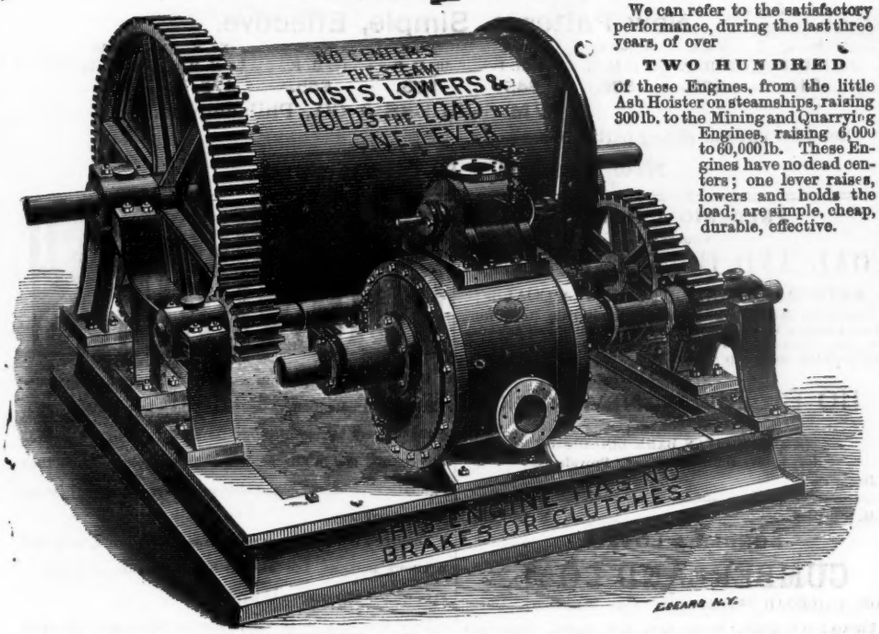
	Bid.	Asked.
New Jersey Central R. R. Co	104½	104¾
American Coal Co	—	63
Maryland Coal Co	21	—
Pennsylvania Coal Co	245	—
Quicksilver Mining Co	33⅜	34
Reading R. R. Co	55⅜	55¾
Delaware and Hudson Canal Co	114⅛	—
Lehigh Coal and Navigation Co	45¼	45⅝
Lehigh Valley R. R. Co	—	61½
Catawissa Preferred	42⅞	43
Delaware, Lackawanna and West. R.R.Co.	109¼	108⅝
Consolidated Coal Co	47⅜	—
Little Schuylkill R. R.	48¼	48¾
Huntington & Broad Top R. R. prefrd.	12	13
St. Louis & Iron Mountain	15	15¼
Morris Canal Preferred	120	125
Susquehanna Canal	6	9

Boston Stock Market.

BOSTON, September 17, 1874.

Copper stocks during the past week have shown considerable activity, the list, however, with the exception of the stereotyped quotation of Phœnix at $14, has declined on an average of, say, $1 per share. Sales yesterday were made at the following figures: Ridge from 5⅜ to 5¼, Calumet and Hecla $130¼@$131, Quincy $31@$31¼. Copper Falls $12, and Allouez $8

ROTARY REVERSIBLE HOISTING ENGINES.



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per share. The *Commercial Bulletin* exhibits the following statement with reference to the Aliouez Mining Company:

Debt, June 1, 1874	$120,000
Cost sheet June	29,000
" " July	49,700
" " August (estimated)	30,000
Total	$228,700
Receipts from Assessment	$39,000
Due " "	81,000
Receipts from sale of Copper, 165 tons at 24 cents per pound	79,200
	$199,200
Balance	$29,500

From the above it would appear that the Company is nearly $30,000 in debt. The rock doesn't seem to turn out quite so rich as had been hoped, 1¼ per cent of ingot being the figure talked about now, and more improvements are contemplated which will probably necessitate another assessment.

The report is as follows:

Aliouez	8	Pewabic	—
Calumet and Hecla Co..	129	Phœnix	14
Copper Falls	1 1¾	Quincy	31
Central	23	Ridge	5¾
Franklin	—	Rockland	—

San Francisco Stock Market.

BY TELEGRAPH.

NEW YORK, September 17, 1874.

We have advices from the San Francisco Stock Board dated the 15th inst. The list is irregular, with the tendency decidedly upward. Yellow Jacket has advanced $14 per share, and Crown Point has declined $4 50 per share; these are the most prominent changes in the list. A dividend of $3 per share has been declared by the Crown Point Mining Co., payable on the 12th inst. The report is as follows:

Savage	58	Imperial	9⅞
Crown Point	61¼	Raymond & Ely	10¼
Yellow Jacket	95	Meadow Valley	5¾
Kentuck	17	Eureka G. V. Bid	7⅛
Chollar Potosi	58	Ophir	—
Gould & Curry	22	Hale & Norcross	—
Belcher	66¼		

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Advertising has furnished me with a competence.—AMOS LAWRENCE.

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. The ENGINEERING AND MINING JOURNAL, which is the Organ of the Institute, and contains its proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. The Council earnestly requests members to forward to the Secretary, for preservation, copies of all printed mining and geological reports, particularly pamphlets, which may fall in their way. It is believed that by this means a large amount of valuable fugitive information concerning different regions and properties in this country, may be caught and preserved.

THOMAS M. DROWN, Secretary, Lafayette College, Easton, Pa.

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Length between Perpendiculars	390 feet.
Breadth of Beam	45 "
Depth to Main Deck	24½ "
Displacement at 22 feet draught	6,000 tons
Area of Midship Section	800 sq. ft.
Number of Transverse Bulkheads	7
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Two pairs, each pair driving one Screw.	
Diameter of Steam Cylinder	72 inches.
Stroke of Piston	45 "
Surface Condensers, area	12,560 sq. ft
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Diameter	18 feet.
Pitch	27 "
Number of Blades	3
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Ten in number; Ordinary Horizontal Fire Tubular Type.	
Total Heating Surface	28,000 sq. ft.
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Vice Chancellor AMZI DODD, of Newark,
Honorable Messrs. W. W. SHIPPEN, and S. B. DOD, of Hoboken,

has been appointed to effect such sale.

Bids endorsed "PROPOSALS FOR PURCHASE OF IRON STEAMER, OR OF PARTS THEREOF," may be addressed to the GOVERNOR OF THE STATE OF NEW JERSEY, by whom they will be received at Trenton, N. J., until 12 o'clock M., on the second day of November next, at which time they will be publicly opened.

Blanks for proposals, and a pamphlet containing a detailed description of the vessel, as nearly completed, except as to armor and armament, may be obtained by addressing either member of the Commission or the undersigned.

Permission to examine the vessel, and to inspect the premises, may be obtained (by intending purchasers) on application at the Dry Dock, where the ship now lies, or to the consulting Engineer to the Commission, who will be prepared to exhibit drawings, to explain the structure of hull and machinery and to give any other information respecting the vessel.

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Consulting Engineer to the Commission, Hoboken, New Jersey.

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Phosphorus	.038
Alumina	.28
Lime	.14
Undetermined matter and loss	.592
	100.000

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Silicon	1.019
Carbon	3.821
Phosphorus	.048
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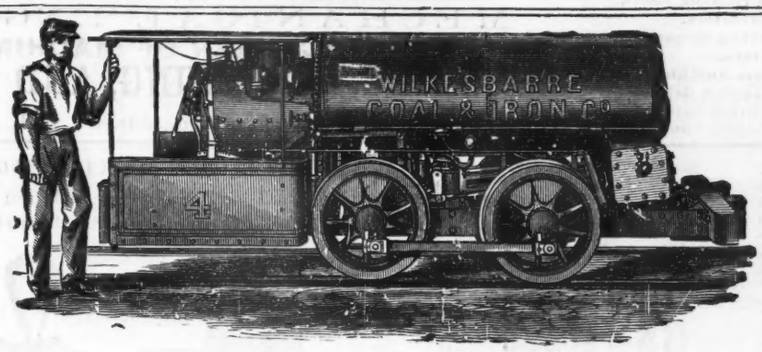

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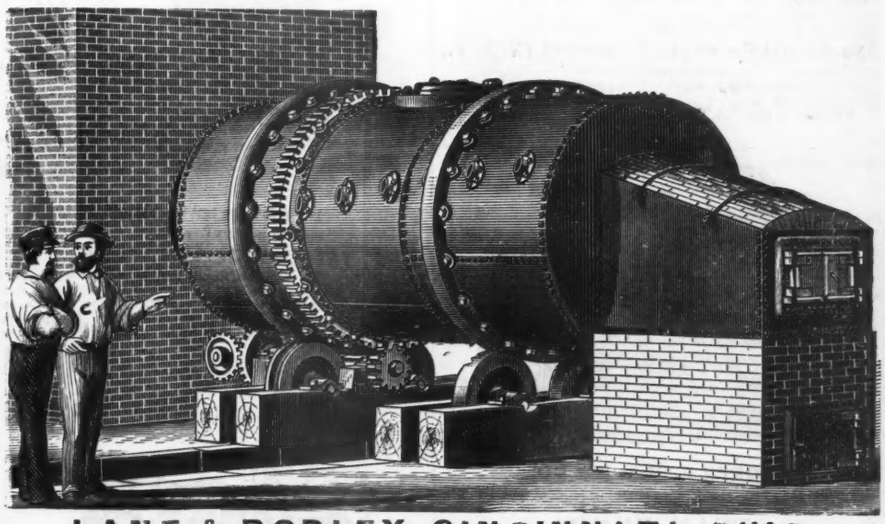

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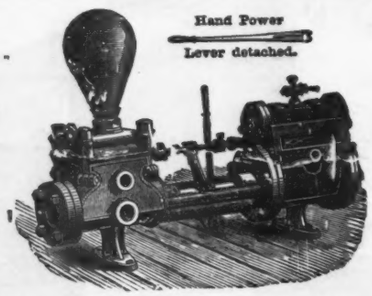

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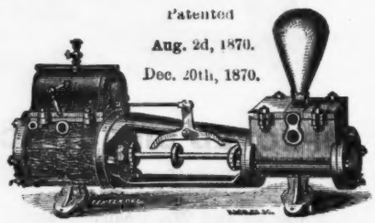

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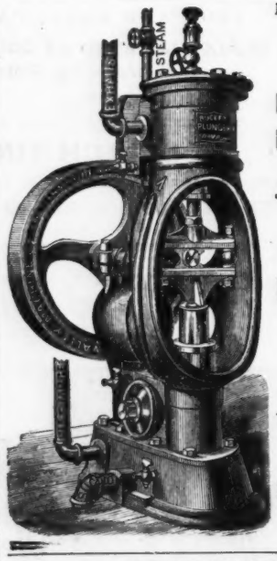

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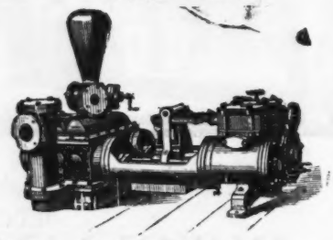

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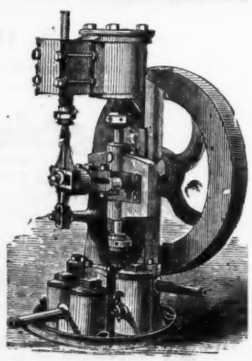

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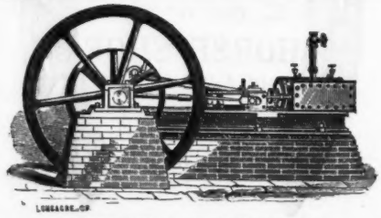

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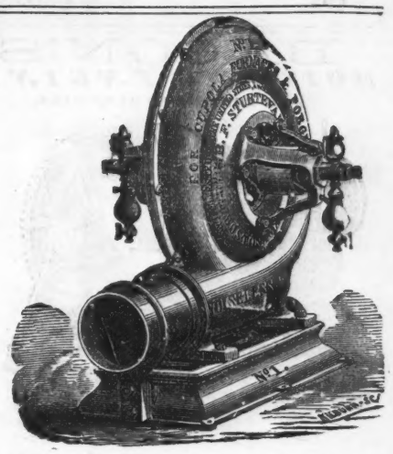

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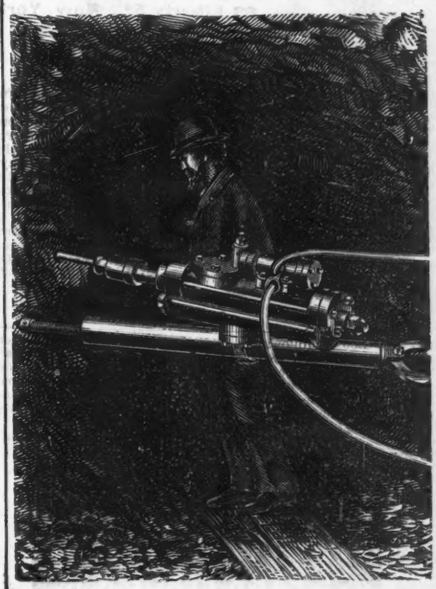

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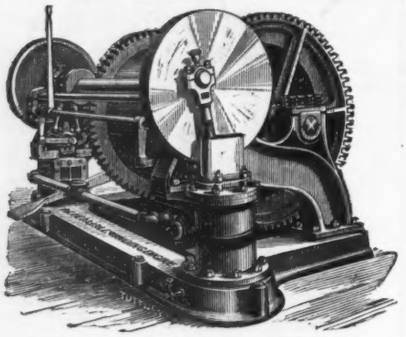

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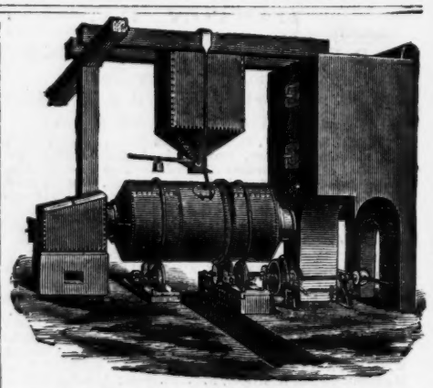

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